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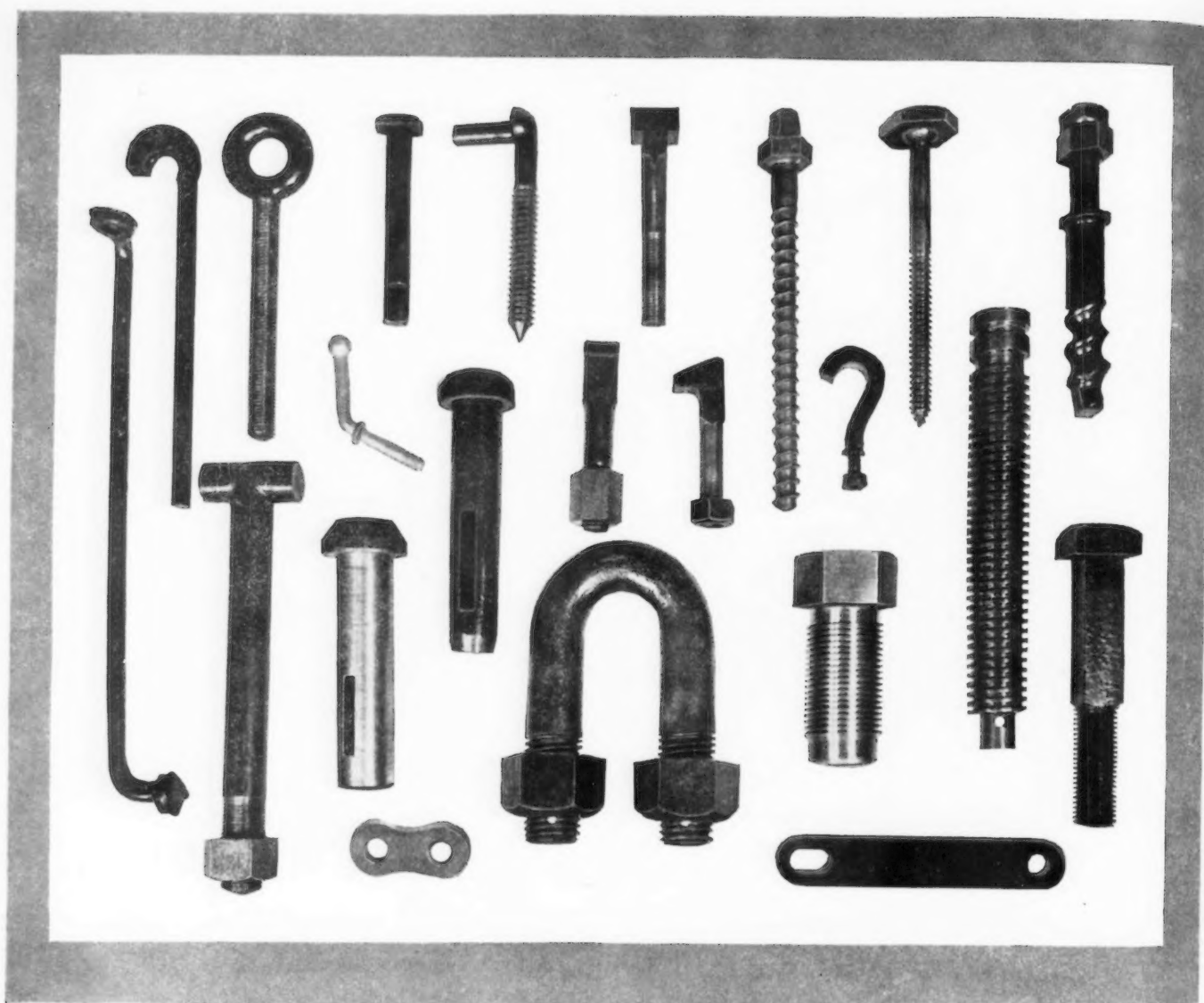


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WHILE Bethlehem's Lebanon, Pa., plant is best known as a source of bolts, nuts, rivets and related products, there is another Lebanon plant activity of growing importance—the manufacture of special parts.

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upsetting and punching operations are available on high-speed, automatic and semi-automatic machines at Lebanon plant. The services of a staff of skilled engineers and metallurgists are available to work out details of manufacture in a way to

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in
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BETHLEHEM STEEL COMPANY

GENERAL OFFICES: BETHLEHEM, PA.

▲▲▲ THE IRON AGE ▲▲▲

FEBRUARY 13, 1936

ESTABLISHED 1855

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Wall Street and Main Street

If some visitor from Mars were to come blindfolded to us at this time and listen to the political chin music now going "round and round," he might well get the impression that we have but two streets in our country; Wall Street and Main Street.

"The inhabitants of Wall Street," he would relate to his countrymen of Mars on returning, "are malevolent werewolves who live and grow fat solely by devouring the innocent and harmless inhabitants of Main Street. Let us rejoice that we do not have this condition on Mars."

Of course the average American is not so easily fooled as would be a blindfolded Martian. Still there are undoubtedly a number who are deceived by the boggy-building demagogues who are so blatantly arraying class against class. The theory upon which these political self-seekers operate is a simple one. "If we can show that Wall Street is against us, Main Street will be for us."

Frankly, we believe that the importance of Wall Street in the American scheme of things has been greatly exaggerated. We say this without condoning its faults or extolling its virtues.

Wall Street does **not** control American business and industry. It cannot tell Henry Ford how to manage his affairs, the price that he shall pay for labor or the amount he may charge for his cars. The same holds true for 99 out of every hundred businesses, large and small.

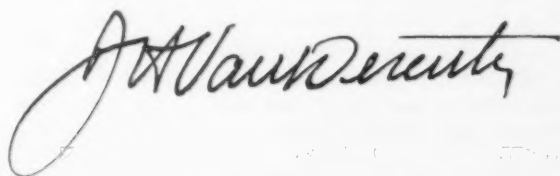
The typical successful American business does not work for the banker. It is more likely to be the other way around. When you find an industrial concern being managed by bankers it is almost invariably because that company has come to grief because of poor management or bad judgment.

Wall Street does **not** control either American credit or money, any more than the U. S. Post Office controls the contents of the letters and packages that the postman carries. How much of the wage money which represents the greater part of our National income do you suppose finds its way to Wall Street? Mighty little!

Wall street has no political influence worth mentioning. It has never had a deciding voice in electing a President, or even a Mayor of New York.

Wall Street is scarcely more than a quarter mile in length. Even if it were packed full of ruthless "money changers" from one end to the other, it could not begin to outweigh in power and influence the 3,200,000 miles of thoroughfares which constitute America's Main Street.

Next time you hear a rabble-rousing demagogue trying to frighten his audience with the Wall Street bogymen, tell him to "be his age."





Shall We Quit or

By G. A. WALKER



HENRY JOHNSTON is the owner of a large and modern manufacturing plant. His friend, John Peters, owns a plant that is more or less out of date. John has just asked Henry what he thinks is wrong, as he has been losing business every year. Henry is having a hard time to convince John that he should scrap half of his old equipment and use some of his surplus cash to modernize his plant.

"Let me tell you a story, John, and perhaps I can convince you that it is false economy to use old equipment that will not allow you

to meet competitive costs and quality. This story is about the Jones Manufacturing Co., which has been in business for over 60 years. It manufactures sheet metal stampings and steel springs.

"This concern had the usual equipment of punch presses, semi-automatic machines, hardening and tempering furnaces, a good sized tool and die room, a power plant and plating equipment. From the start of the business in 1858, it had grown rapidly, adding new equipment and keeping up with the times. In 1908, it was one of the leaders in the industry.

"At this time, due to the death of one of the owners, the business changed hands. The new owners were not so progressive and were too conservative about making changes in their equipment or methods.

"For a few years the business coasted along on a record of quality and service built up by the former owners. But in 1928, 20

years after they had taken over a prosperous and up-to-date plant, they were operating with tools and equipment that could well have been in the scrap heap years ago.

Nickel Pinchers

"The directors and the president of the concern had adopted a policy of not spending a nickel for any tools or machinery unless it was an absolute breakdown, and then the orders were to repair it the best way possible until new equipment could be afforded. But the new equipment seemed to be getting farther and farther away.

"Overhead costs were mounting higher every day. The quality of their products was far below their old standards. They were losing business and losing money, and this in a year when business was good and profits high.

"The sales manager was having a hard time to hold customers. The factory costs were so high that the business he did get was not

or Modernize?

Scene, U. S. A. Time, 1935

showing a profit. He blamed the factory. He could not get business with products that were below the quality of competitors. Customers would no longer pay an equal price for an inferior article.

"The factory blamed the sales department. How could it do anything with short runs? Why couldn't the sales department land some of the big contracts? Look at the Smith Co., working two shifts and building an addition to the plant.

"The whole organization was up in the air doing its best to keep things going and wondering how long it could hold out. All were good men, from the superintendent down. They were doing the best they could with the equipment they had. Most of them had grown up in the plant and were going to stick as long as it lasted.

Then Came the Lightning

"Old Mother Nature came along in March of 1929 and put an end to their struggle. The plant was struck by lightning, resulting in a total loss of the entire plant and equipment. A meeting of the directors was called at the home of the president. The directors arrived there with but one thought in mind. That was a feeling of thankfulness that the struggle was over and they were to get out with a little insurance money.

"Old Mr. Conservative, the chairman-of-the-board, made the motion that they settle up the business and close it out. 'We have been losing money for the last four years,' he said, 'and we would have had to close up before the year was out.'

"They were all ready to second the motion when the president's son-in-law, Tom Taylor, spoke up. He was at the president's that morning and had been allowed to listen in on the meeting. Tom was

REMEMBER the plant that was struck by lightning and then underwent a process of rejuvenation through wholesale replacement? Well, here is another one that had the same experience.

This article is the third prize winner in the IRON AGE modernization contest that was staged in connection with the Machine Tool Exposition. The author, G. A. Walker, is a superintendent who knows "what is what" and how to tell others about it in an interesting way.

about 39 years of age. He owned a large manufacturing plant of his own and was also thoroughly familiar with the Jones' plant.

"Tom was a progressive sort of a chap; had a wide experience in the manufacturing game, a lot of common sense and knew plenty about modern equipment and production methods. 'I'd like to talk to you gentlemen, before you decide on this question,' he said. 'I was thoroughly familiar with your plant and your methods. I feel it is a shame for you to quit with the reputation you have built up in the last 50 years. It is due to your own shortsightedness and penny-pinching economy that your plant was in such a run-down, non-paying condition. If you had started 10 years ago to make a few changes in equipment and methods you would have been leading the field today.

"But by being a bunch of penny-pinchers and not having the

nerve to make some drastic changes, you kept losing money until you had used up all your surplus cash, and when you woke up to the fact that you had to have new equipment, you could not afford to get it.

Tom Tells Them

"I could show you a dozen different places where you were losing money that could well have been changed to profits. Let us start at your power plant. A steam engine with a belt drive to a main shaft that went the whole length of your first floor and then countless belts and countershafts from that up to the fourth floor. You were losing thousands of dollars a year on this alone.

"You could have installed an electric generator and put in group drives. By doing this, your power bill would have been cut 30 per cent. A few new machines and conveyors would have made another big saving in departmental transportation costs. Every time I went through your plant I was kept busy dodging trucks going from one department to another.

"You had a production of 50,000 springs a year. You were hardening them in stationary oil furnaces, hand operated. The quality of your hardening was not uniform and you were getting a high percentage of rejects. The best production you could get was 2500 springs per hour per furnace.

"You can buy an American electric continuous belt conveyor furnace model, B.C. 45-kw.-230 volts. This has a heating chamber 60 in. long, a conveyor 16 in. wide, and will handle 325 lb. per hour, or a production of 10,000 springs per hour.

"We are using a furnace of this type on small parts and we dis-

(CONTINUED ON PAGE 64)

THE toolmaker is essentially a craftsman, working by hand. He requires equipment which of necessity must become part of him—in which he can sense a certain element of "feel." The machine tool exhibition of 1929, with its impressive showing of equipment for rapid, repetitive production, did not contain much for the toolmaker, but the exhibition held last fall was replete with new designs of direct and immediate value to him. Impressions relating to the present status of machine tools for this basic use, gained in part from the last machine tool show, are set forth in this article by the president of a well-known company, a substantial portion of whose plant is devoted to all branches of tool, fixture, and model making.



One of the more heartening features of the recent Machine Tool Show in Cleveland—at least to those who are charged with responsibility for the production of tools, dies, jigs, fixtures and other tool room products—was the evidence which was apparent on every side that machine tool manufacturers are at last awakening to the fact that mass production is not the sole function of machine tools in our modern economy. A capacity for taking phenomenally heavy cuts, the superimposing of multiple spindle upon multiple spindle, and all of the other concomitants of latter day mass-production design are all very well in their place but when machine tool designers direct all of their energies toward evolving tools of this nature, the toolmaker and his foreman become very much the forgotten men of the metal cutting industry.

It is perhaps natural that the ever-increasing production of the boom years, culminating in the excesses of 1929, and the accompanying pressure for lower cost, should

Better Machine Tools

have evidenced themselves in the Machine Tool Show of that year with an almost exclusive devotion to the cause of mass-production. Indeed, it was a startling fact that in 1929 many concerns which had built their reputations upon the manufacture of fine tools for the solution of precision problems seemed to discard altogether in that year models of machines which had been standard in the tool rooms of the country for many years and, offering no substitute for them, gloried in new products

which would be as out of place in a tool room as a steam roller would be on the front lawn.

Tool Maker Still a Manual Worker

This trend was notably evident in milling machine design. Designers attuned to the new needs of the production industries evolved models of such rugged construction that in the eyes of the toolmaker they could only be characterized as cumbersome. Automatic features of every sort

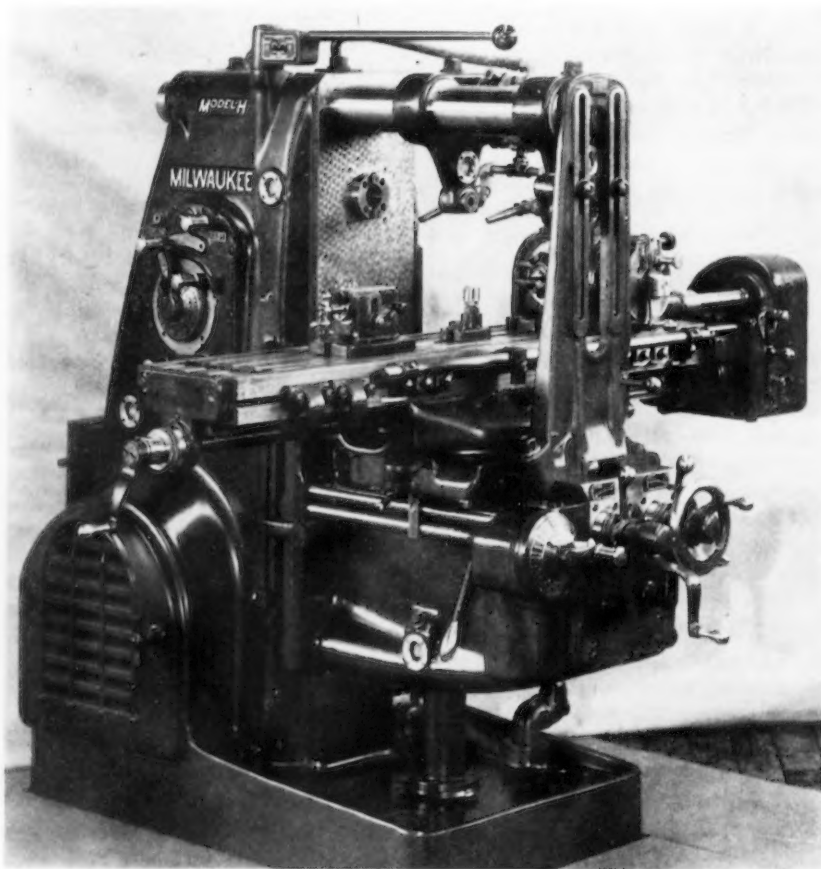


FIG. 1—The table and knee of the new light-type milling machines may be moved without "horsing" to settings of a fraction of a thousandth. Wide range of application is also an advantage for tool room use. The machine shown is the model 2H universal made by the Kearney & Trecker Corpn.

Tools for the Toolmaker

By FREDERICK S. BLACKALL, JR.
President, Taft-Peirce Mfg. Co.,
Woonsocket, R. I.

were provided, power traverse was limited only by the natural bounds of a three-dimensional world, until it seemed that machine tool builders had entirely lost sight of the fact that the toolmaker is still a manual worker whose machine, of necessity, must become a part of him—in which he can sense a certain element of human "feel."

Lathe design, perhaps to a lesser extent, followed the same trend. Each lathe maker's booth was shrouded in a cloud of smoke if indeed his machine itself was not

buried in a mountain of blue chips, mute testimony to the ability of his machine to reduce an 8-in. bar to a sewing machine spindle in a trice with the aid of the newly developed tungsten carbide cutting tools.

Drill press design curiously lagged behind the parade but where any new development was evident, it seemed to take the same course with "hole-hogs" and special purpose production spindles the order of the day. The much needed development of light high-

speed, quick change-gear drills was left to the next half decade.

Boring machines offered little of new interest to the toolmaker in the 1929 Show and only in the field of light jig boring was there evidence of serious consideration of his problem.

Accessory equipment and machine tool specialties such as die sinkers, die filing machines and similar tools presented an occasional novelty in their field but for the most part evidenced little thought to the problems of the tool room.

Before we contemplate the change which the ensuing six years have wrought, let us consider for a moment wherein the requirements of the toolmaker differ from those of his brother in the production department and why it is all important—important, indeed, even for the ultimate needs of mass-production itself—to provide the toolmaker with implements of sufficient precision and delicacy to permit him to work out his problems to the best of his ability.

Machines Should Assist, Not Hinder Manual Dexterity

Let it not be forgotten that the toolmaker is essentially a craftsman—something of a sculptor in metal—producing articles which in most instances have not been and will not be duplicated. Working by hand, then, he requires tools which will essentially extend his reach and magnify his touch, accentuating rather than diminishing his manual dexterity. Thus it follows that machine tables must be of such weight and construction that they can be moved with a minimum of effort and a maximum of precision. Rigidity is important for the attainment of precision, but its advantages are defeated if it is accomplished by so much addition of weight that the machine must be "horsed" into the proper position or if mere inertia of cumbersome weight destroys delicacy of adjustment. Physical fatigue can quickly destroy the fine touch of the toolmaker.

Simplicity of set-up is a *sine qua non* of tool room equipment. The toolmaker may have to go into a machine twenty times a day on twenty different operations, each consuming but a few moments in itself. The old time tool room

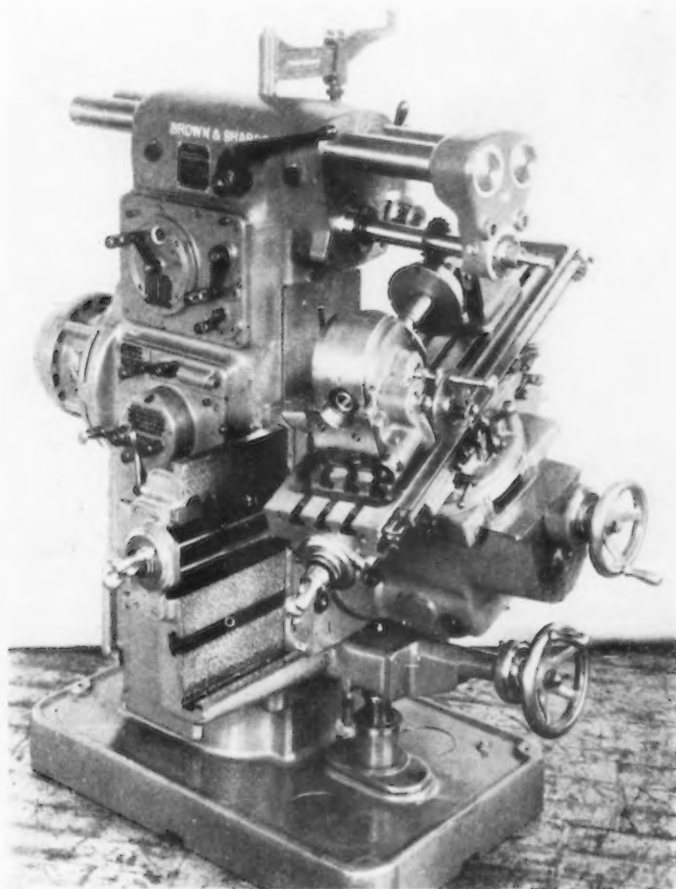
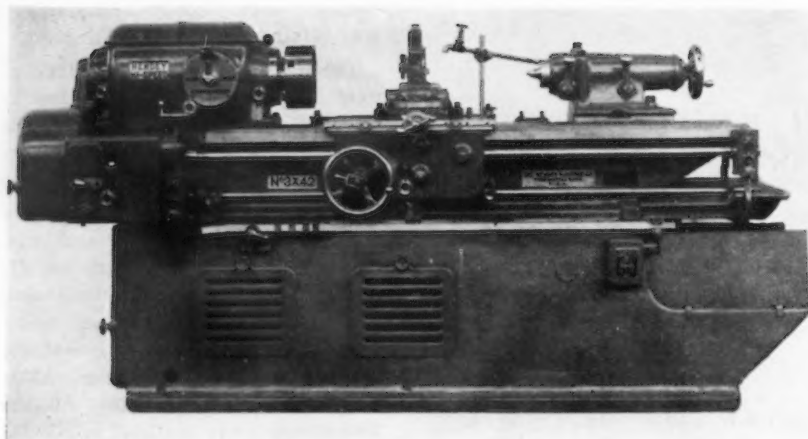


FIG. 2—This Omniversal milling machine, a new product of the Brown & Sharpe Mfg. Co., can readily be set to mill any simple or compound angle desired. Both knee and table can be swiveled, and verniers provide for accurate setting.



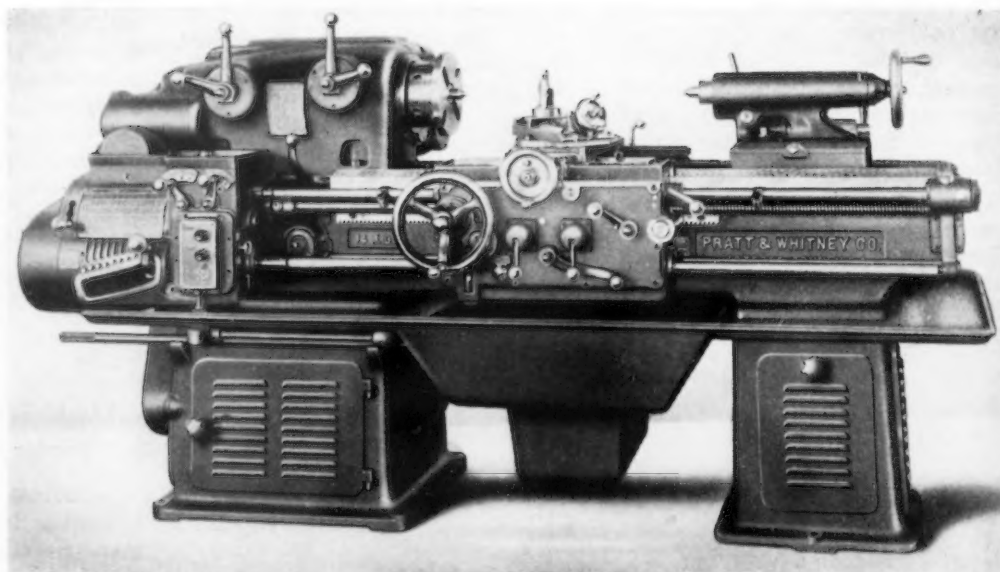
ABOVE

FIG. 3B—This Hendey step-turning lathe is designed to utilize carbide tools at speeds as high as 1400 r.p.m. It is equipped with the New Departure Transitorq variable-speed drive.

o o o

AT RIGHT

FIG. 3A—Modern general-purpose screw cutting tool room lathe, the Pratt & Whitney model C, with speeds up to 1000 r.p.m.



in high-speed machines, often hydraulically operated, for roughing out die blocks, etc., at speeds which really mean something to the toolmaker. Such machines represent a sound application of automatic principles—that is, they substitute power for manual operation where power operation will really do a better and faster job.

Long Time Precision Required

For tool room use, the machine tool must above all provide means for attaining the ultimate in precision and beyond this it must be

lathe with its belt drive, providing a handy means of moving the faceplate into proper position or adjusting the carriage when engaged with the screw, is an example of a machine providing manual convenience. While recognizing the outstanding advantages of motor drive and geared head design, machine tool builders should take care to provide the toolmaker with equivalent means of accomplishing the same delicate adjustments by hand with a minimum of effort and inconvenience and a certainty of yield to the touch.

Simplified Feed and Speed Changes

A reasonably wide range of feeds and speeds should be provided for the requirements of the toolmaker, and the means of effecting these changes should be simplified to the utmost possible extent. In this respect mass-pro-

duction design has made a definite contribution to the tool room, and the dial and lever mechanisms and other quick change means which modern production machines afford find ready acceptance in the tool room, though they are too often applied exclusively to machines which are for other reasons unsuitable for tool room use.

Interesting evidence of the recent recognition of the essentially manual character of tool room equipment is exemplified in the development of small-sized surface grinders with hand-operated tables. More often than not in the old days the Brown & Sharpe No. 2 surface grinder was stripped of its power feed and traverse mechanism as soon as it was set up in the tool room. Today, grinder manufacturers are at last offering machines minus these needless mechanisms, with resultant savings to the buyer and where power feeds are applied they are offered

so constructed that its inherent accuracy will not be easily destroyed in use. The latter-day development of end measuring devices for locating purposes on boring machines and jig borers is a definite forward step. Where precision lead-screws are utilized longevity would dictate their being supplemented by some automatic compensating device which can be periodically touched up to compensate for the natural wear occurring between lead-screw and nut. This is a commonplace feature of design in specially equipped precision lathes utilized by gage makers but it has yet to be offered as a standard feature of a commercial tool room lathe. Application of this principle has been successfully made in the type of jig boring machine manufactured by the Société Genevoise—the familiar Swiss jig borer. Time alone will prove whether this or the end measure method is prefer-

able for accurate locating purposes in a machine of this character.

Summarizing the peculiar requirements of the tool room with respect to its equipment, then, machine tools for this special use should be light, versatile, adaptable to a wide range of work, easily adjustable, readily set up, delicate in touch and feel, yet sufficiently rugged to withstand the rigors of constant use, and capable of producing work of the utmost precision over a long period of time.

Recent Show Replete With Tool Room Machines

Happily the machine tool builders who seemed so blind to the needs of the toolmaker in 1929 have had a change of heart and the 1935 Show was replete with tool room equipment which com-

millers, rigidity and stability have been accomplished through studied ribbing and advanced design in lieu of sheer weight. The table and knee are sufficiently light so that the toolmaker can readily move them at will to settings of a fraction of a thousandth. A wide range of feeds and speeds (up to 28 in. of table feed and 40 to 1300 r.p.m. spindle speed) is readily obtainable through a quick acting dial device or other simple means.

Versatility and applicability to a wide range of uses is important in a tool room milling machine. Fig. 2 shows a machine which fills a long desired need—a milling machine which can readily be set to mill any simple or compound angle desired. The knee swivels through 60 deg. right and left while the table itself, supported on the knee, can be swivelled at right angles to this direction through an arc of 50

deg. either side of zero. Verniers are provided for accurate setting to 2 min. in each case. Combined with facilities for high speed light milling, this machine should prove a veritable boon to the toolmaker.

Lathe Speeds Stepped Up

The outstanding development in engine lathes during the past six years has been the stepping up of spindle speeds to take full advantage of the possibilities of tungsten and tantalum carbide cutting tools. Screw cutting engine lathes are available with speeds up to 1000 r.p.m. while straight turning lathes are available with speeds of 3000 r.p.m. or more. Anti-friction bearing and ground gear constructions have become well nigh universal, and these two developments have brought with them possibilities of accuracy and finish which in many cases render subsequent

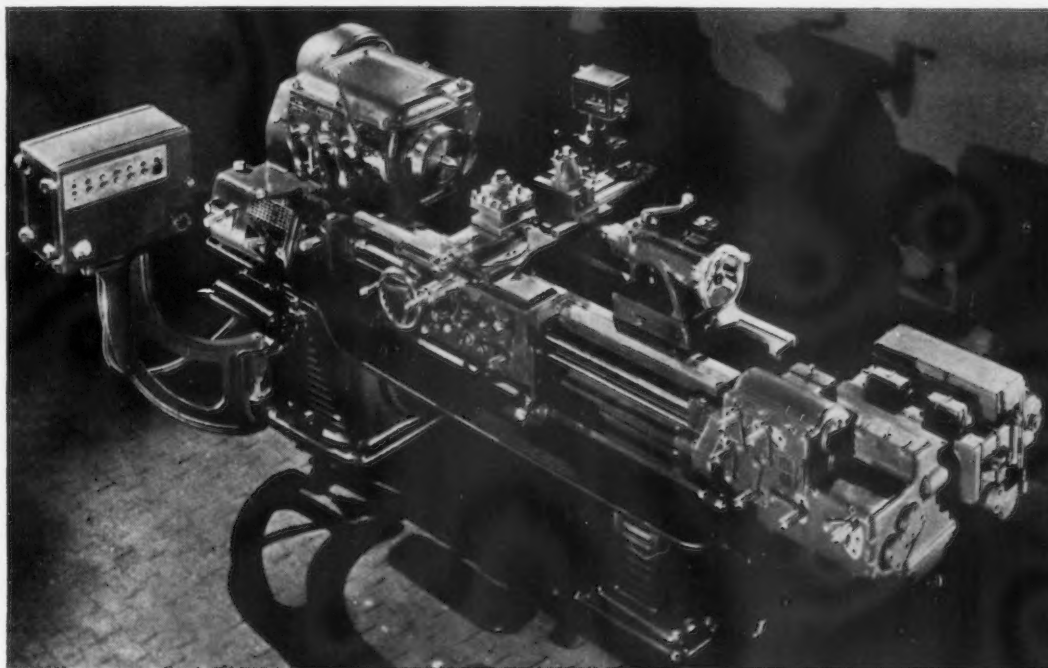
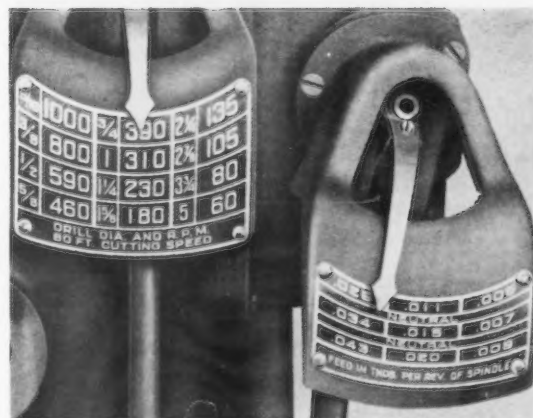


FIG. 4—Automatic form turning lathes of this type have been found to simplify operations in tool rooms called upon to produce complex forms, as in mold shops. The machine shown is the Monarch-Keller, built by the Monarch Machine Tool Co.

bined many of the high speed features of modern production equipment with the old-time ready adaptability to the manual dexterity of the toolmaker.

A good example of modern and effective milling machine design for tool room use is illustrated in Fig. 1. Several machines of this type were shown in Cleveland last fall—new models which are of materially lighter construction than the machines which in 1929 had all but superseded the old tool room miller. In the new light-type

AT RIGHT
FIG. 5—Direct-reading speed and feed plates of Super Service upright drills built by the Cincinnati Bickford Tool Co.



grinding of the work unnecessary, even on precision parts. Forced feed lubrication to all moving parts, use of alloy steel and in many instances application of chromium plate to shafts and screws assure long life without loss of accuracy.

Where the tool room is called upon to produce complex forms, as is the case in a mold shop, for example, the lathe pictured in Fig. 4 converts an erstwhile endless hand filing job into a simple mechanical operation. Applying the basic principle of the well-known Keller engraving machine to lathe construction, this type of tool, which is available in other makes as well as the one illustrated, is a necessity in tool rooms serving such industries as glass and rubber manufacture.

Great strides have been made during the past five years in drilling equipment for tool room use. Speeds can be shifted at will through a wide range by means of the lever and index plate illus-

trated in Fig. 5. Fig. 6 shows a construction typical of a large number of modern high speed sensitive drills now available for the tool room. Power feeds, also available in wide variety from 0.003 in. to 0.040 in. or more per revolution of spindle, and quick-acting tapping attachments speed up the work, increase drill and tap life, and generally improve performance.

It is fair to state that the drill press developments of the past five years have virtually rendered obsolete tool room drilling equipment purchased prior to 1930. An exception to this statement might be made in radial drills of the smaller sizes which were well on their way to present-day design at

the time of the 1929 Show, although the top speed ranges have been increased well over 100 per cent since that time. Here again anti-friction bearings, forced feed lubrication, and power elevating mechanisms and electric or hydraulic clamping features have added a new measure of manual convenience and flexibility that opens a much wider range of application for these tools in the tool room than was formerly the case.

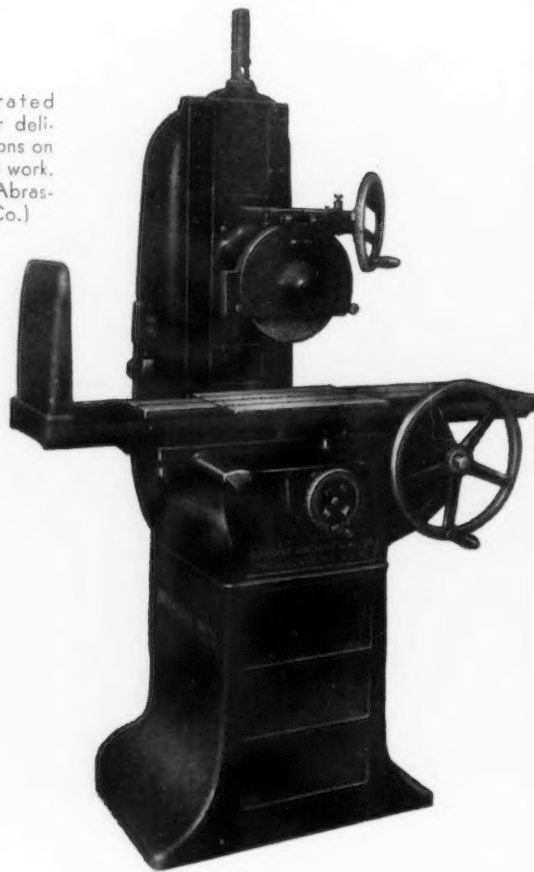
Simplified Grinders Available

In the field of grinding, reference has already been made in this article to the recent trend toward simplification of light surface grinders through elimination of needless power traverse features.

o o o

AT RIGHT

FIG. 7—Hand-operated surface grinder for delicate grinding operations on small and medium size work. (Photo by courtesy Abrasive Machine Tool Co.)



o o o

AT LEFT

FIG. 6—Typical high-speed sensitive drill available for tool room use. Quick-tapping attachments speed up the work, increase drill and tap life and improve performance generally. (Photo by courtesy Chas. G. Allen Co.)

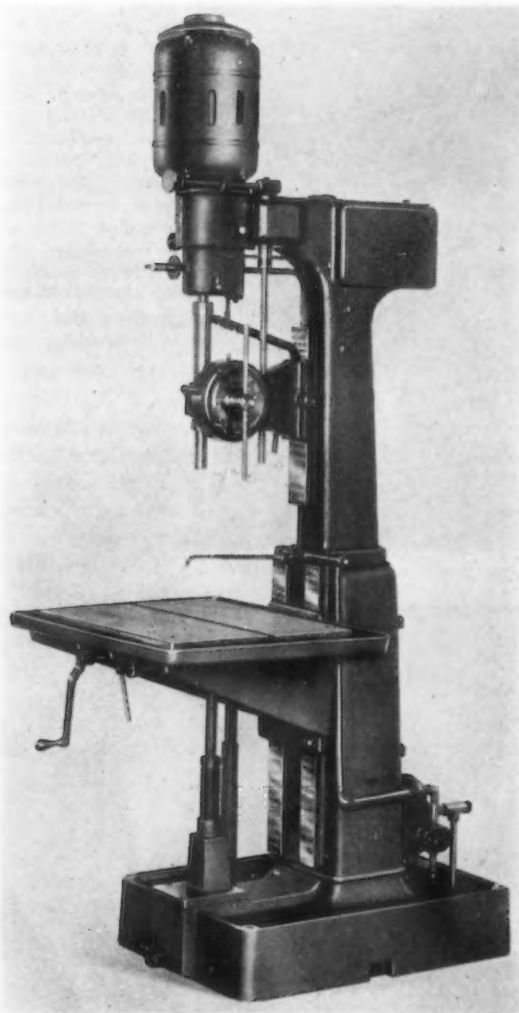
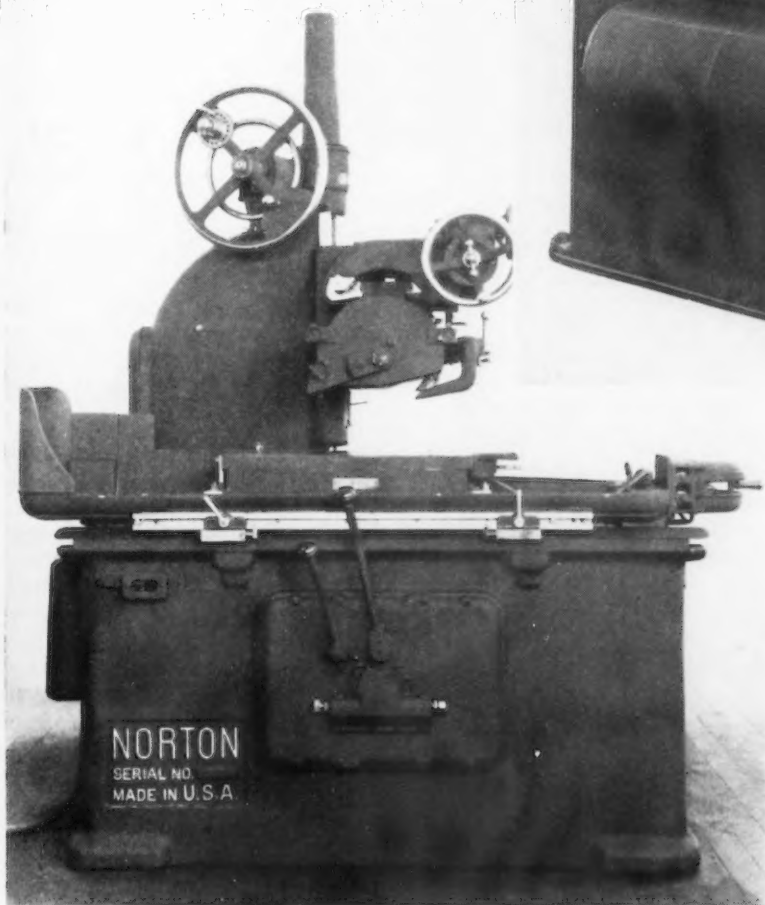


Fig. 7 illustrates a hand-operated surface grinder of this character—a particularly useful tool for delicate grinding operations on small and medium size work. While reversion to hand-operated machines may seem like a step backward, in reality this is not the case. It is simply a recognition of the distinction which exists between operations which are essentially manual and those, such as

roughing out operations, which are amenable to power application. In the latter field, the high-speed surface grinder of the type pictured in Fig. 8 is typical, operating at a maximum table speed of 100 ft. per min. and capable of producing work to a flatness tolerance of 0.0005 in. or less.

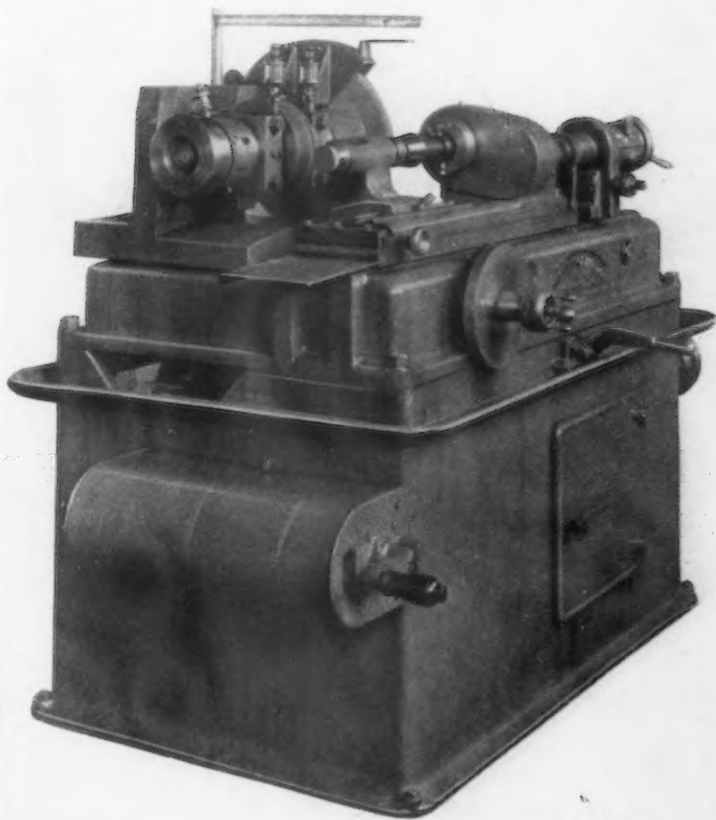
Cylindrical grinders and profile grinders have been given greater smoothness of operation with resultant freedom from chatter and improvement in grinding finish



through the introduction of pre-loaded spindles, ball and roller bearings, and higher spindle speeds. The commercial development of the thread grinder, now in its infancy, adds a new and interesting tool, allied to the cylindrical grinder, which will find useful application in many tool rooms. The next five years will witness a widespread adoption of this type of machine which has been in common use in Europe for some time past.

The hydraulic shaper-planer of the type illustrated in Fig. 10 is

a tool still too infrequently employed in the tool room. This machine will operate at speeds as high as 90 ft. per min., obtained through hydraulic drive which has now been perfected to the point where it is reasonably trouble proof. When cutting speeds and feeds on lathes and similar machines are considered, planer speeds would appear to be hopelessly out of date. This writer believes that planer design is, as a matter of fact, about to enter a period of unprecedented development. Why should we not envision



ABOVE

FIG. 9—Thread grinders, in common use in Europe for some time past, will be increasingly employed in American shops. The machine shown is built by the Taft-Peirce Mfg. Co.

o o o

AT LEFT

FIG. 8—For roughing out operations in tool rooms, a number of power-operated, high-speed surface grinders are available. The 10 x 12 x 24-in. Norton Co. hydraulic unit shown is equipped with a Taft-Peirce super power magnetic chuck, and operates at table speeds up to 100 ft. per min.

the day when table speeds of 250 ft. per min. will be commonplace in the planer field? And why shouldn't they be? The only serious obstacles which would seem to be presented are the limitations of holding the work and the inertia of a heavy table. The first obstacle is certainly not insurmountable and the solution of the second may lie in the field of the lighter

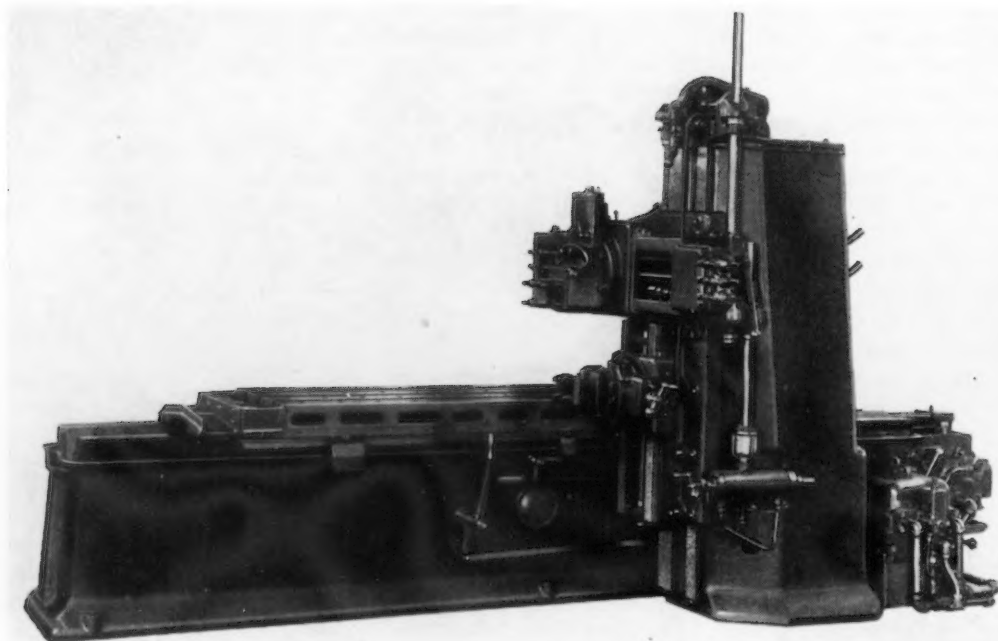


FIG. 10—This shaper planer, which operates at speeds as high as 90 ft. per min. through a hydraulic drive has advantages for tool room application. (Photo by courtesy Rockford Machine Tool Co.)

alloys of aluminum and magnesium whose strength exceeds that of cast iron while many times lighter. It is understood, in fact, that certain planer builders are about ready to announce high speed machines approximating such speeds; their application to tool room work should be especially practicable.

Boring Machines With High-Speed Spindles

The chief development in jig borer and boring machine design during the depression years has been the addition of high-speed spindles, a most desirable move, which will reduce much of the

wear and tear on spindles used in boring small holes in large work. Accessories, such as rotary tables, boring heads, etc., have been redesigned to permit greater accuracy of setting, thus adding to the usefulness of this type of equipment.

A number of notable specialties which find their major application in the tool room may be mentioned. The high-speed die filing machine—flexible, well-nigh universal, and simple to operate—was formerly available only in an imported machine. Today excellent American machines filling this much wanted need are available, some of them capable of both filing and sawing.

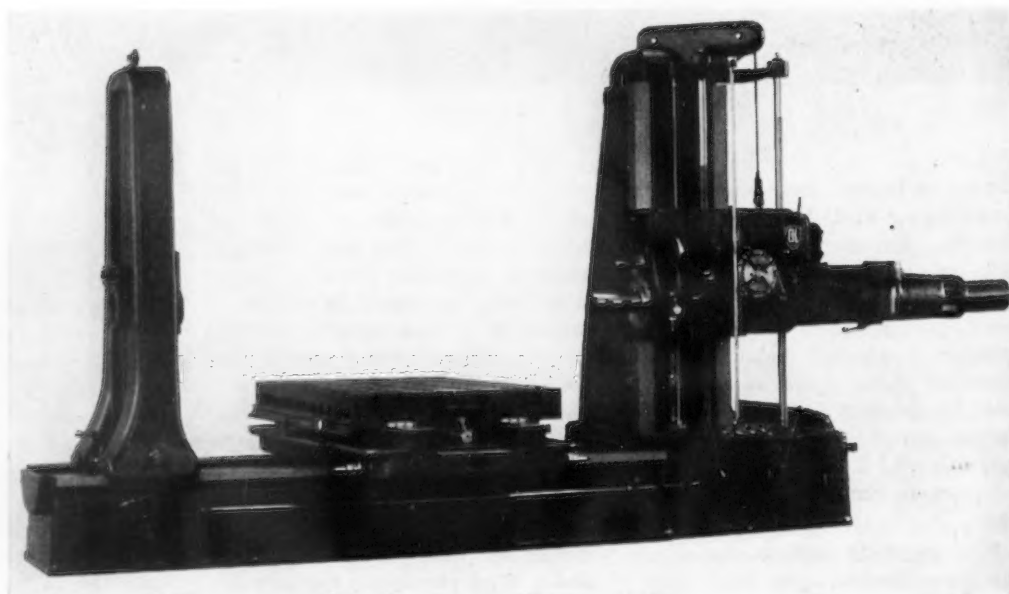
A typical machine of this class is pictured in Fig. 13.

The Keller die sinker has been considerably improved in accuracy and convenience, finding its major application of course on die work.

Gas Cutting Machines for Tool Room Work

Much too little used is the oxy-acetylene pantograph cutting machine which is quite indispensable in many tool rooms, especially those concerned with the production of irregular shapes of any sort. Templates, mold bodies, and fixture parts which if produced in quantities would be made from drop forgings can by this means

FIG. 11—The addition of a high-speed spindle reduces much of the wear and tear on spindles in boring of small holes in large work. The precision boring, drilling and milling machine here pictured is the No. 350-T built by the Giddings & Lewis Machine Tool Co.



be turned out rapidly from rolled steel plate even of substantial thickness. The modern flame cutting machine can be accurately guided to a master template or drawing and will cut metal to such a sharp line that very little machining has to be done to clean up the rough surfaces left by the flame. Using this device in combination with an electric arc welding machine, the tool maker can effect many short cuts, and eliminate pattern expense, for welded jigs and fixtures are here to stay.

Another roughing out machine which has converted hours and minutes into seconds is the abrasive cut-off machine which will sever a 2-in. bar clean and reasonably square in 15 sec. The conversion of this machine from dry to wet, now standard, assures greatly increased wheel life, smoother and more accurate cuts, and freedom from burning or hardening of the cut-off surface. An interesting feature of this machine is that it will cut hardened steel and tubing even more readily than it will cut soft steel, which has obvious advantages on occasion in the tool room.

It is not within the scope of this article to attempt to enumerate all types of machines which can be or might be used in the tool room, although for convenience, the following list of equipment is typical of what might be gainfully employed in a modern tool room equipped for, say, 20 or 25 tool-makers doing a general class of work. Naturally the list might be altered in special circumstances. A glass mold shop, for example, would require more special purpose machines than a jig and fixture shop. However, the list may be helpful both as a standard of comparison and as a guide for any casual reader who may have the problem before him of setting up a new tool room.

- One jig borer.
- One hydraulic shaper-planer.
- One 24-in. heavy-duty universal shaper.
- One 12-in. plain shaper.
- Two horizontal boring machines with high and low speed spindles or equivalent.
- One double-spindle centering machine.
- One heavy-duty die making machine.
- Two disk grinders.
- One small sensitive single-spindle drill press.
- Two No. 1 single-spindle motor-spindle drill presses.
- Two 28-in. upright drills.

- One 4-ft. radial drill.
- One bench filing machine.
- One No. 13 universal and tool grinder.
- One No. 1½ hand-feed surface grinder.
- One No. 2 surface grinder, hand feed.
- One hydraulic table drive high-speed surface grinder.
- One No. 2 universal cylindrical grinder with internal grinding attachment.
- One No. 1 universal cylindrical grinder.

- One nibbling machine.*
- One 36-in. Bullard vertical turret lathe.*
- One 2½ x 3½-in. universal turret lathe.*
- One No. 3A universal die sinker.
- One hand-operated screw press.

Bench centers, surface plates, bench blocks and vises; inspection and tool crib equipment; small bench furnace and heat treat facilities; and press facilities for trying out punches and dies.

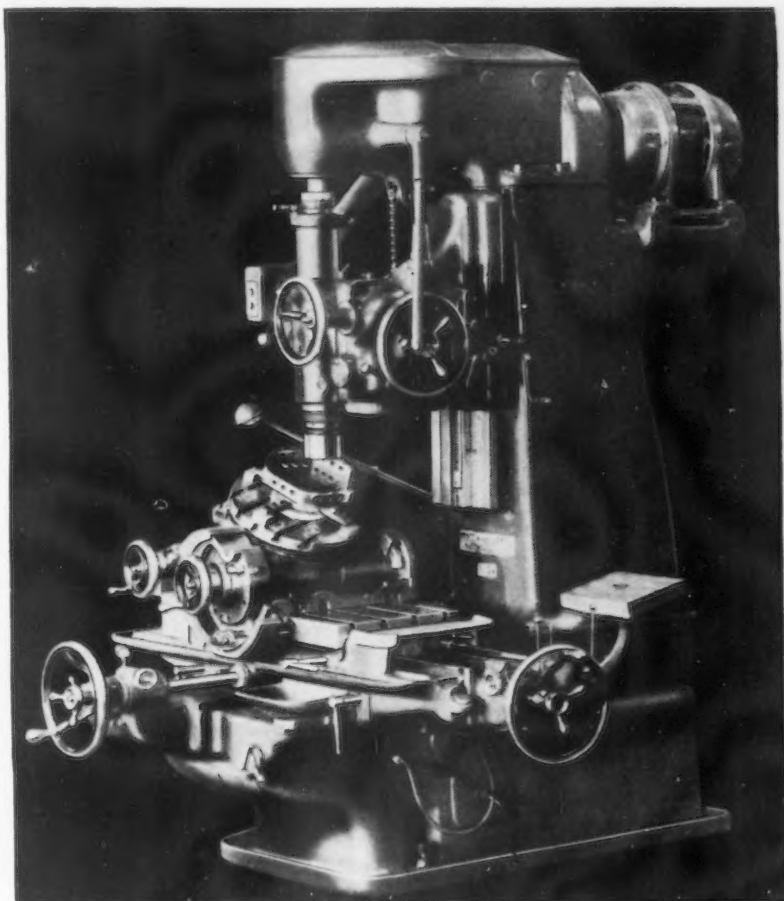


FIG. 12—This jig boring machine, the new Pratt & Whitney No. 2A, has speeds up to 1800 r.p.m. and features a "shockless" insulated motor and spindle drive.

- Two wet tool grinders.
- One 20-in. engine lathe.
- Three 13 x 48-in. lathes.
- One 13 x 32-in. lathe.
- One 14-in. engine lathe with backing-off attachment.
- Two bench lathes, 7 in. x 32 in.
- Three No. 2 tool room millers.
- One No. 2 Omniversal miller.
- Two No. 3A universal millers.
- One No. 2A vertical miller.
- One bench miller, No. 3 universal.
- Three arbor presses.
- One 6-in. stroke vertical shaper.
- One oxy-acetylene shape cutting machine.
- One electric arc welding machine.
- Acetylene welding equipment.
- One power hack or band saw.
- One abrasive cut-off machine.*

*Useful but not essential.

It will be noticed that the list includes a number of machines which might be regarded more properly as production equipment. While the emphasis in this article has been on the importance of providing light, frequently delicate, and always precise equipment for the toolmaker, it should not be forgotten that the first operation in almost any manufacturing problem is roughing out and frequently this involves hogging cuts where high production methods are of course distinctly indicated. Thus the tool room should be provided with milling, turning and grinding equipment, in particular, which will permit stock to be removed with

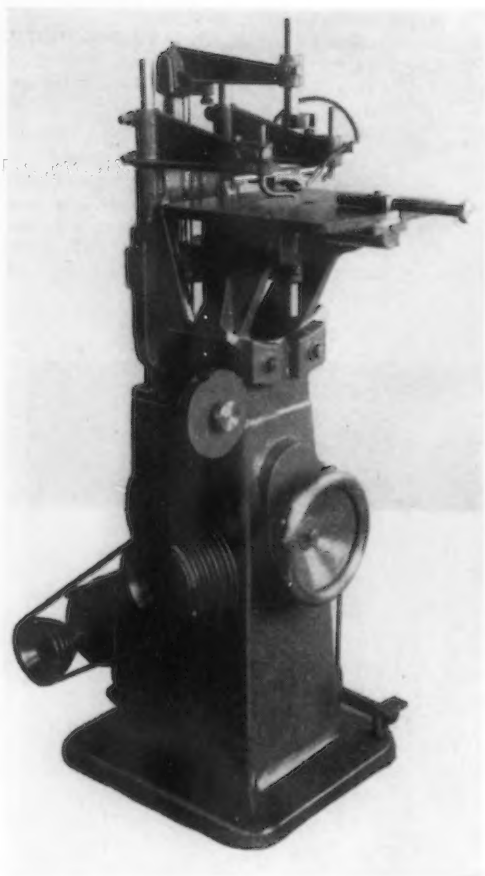


FIG. 13—High-speed, heavy-duty die filing machines that are flexible and practically universal, and that are capable of both filing and sawing, are obtainable. (Photo by courtesy Oliver Instrument Co.)

a maximum of speed and efficiency for first and second operation work.

Best Equipment None Too Good for Tool Room

Too often the tool room, especially where it caters only to the needs of its own shop, is the repository of the cast-off equipment for which other departments can find no further use. Many a shop which will spend thousands of dollars on the latest developments in production equipment is more or less niggardly regarding its tool room. This is perhaps natural enough, for many concerns lack a sufficiently steady run of tooling and maintenance work to justify the expense of maintaining a tool-making department equipped with the latest and best in machine tools, only to lie idle half of the year. Unless such a layout is in continuous use, it is indeed a dubious investment. But it is an even poorer investment to spend money on inadequate tools; indeed, no greater mistake could be made. Upon the accuracy and soundness of jigs, fixtures, punches and dies, molds and gages which the tool

room produces depends, in the final analysis, the accuracy of the product and the speed with which it can be produced. The alert management of today will do well to consider that charity should begin at home—that its own equipment building department, viz., its tool room, should be equipped with the best and latest machines available. Where this is not economically possible, the wise management will follow the only sensible alternative and that is to eliminate its tool room altogether, except for emergency and simple maintenance work, and turn its tooling problems over to a specialist who is properly equipped for the purpose.

The writer's experience of many years in directing the activities of a concern which has served as tool-makers to the production industries since interchangeable production of precision parts originated, proves beyond peradventure that high standards in tool making can be accomplished and maintained only by the systematic replacement of obsolescent machine tools and accessories. The fine tool shop, by serving a wide list of customers, thus keeping its tool room in con-

stant operation, is enabled to do this very thing—and indeed therein finds its major justification for existence. In no field may it be said more truly that "You can't make a silk purse out of a sow's ear."

A Century of Machine Tools

THOSE of us who like to go back to the beginning of things—and who does not—are indebted to the Taylor & Fenn Co. of Hartford, Conn., for a most interesting 24 page booklet entitled "One Hundred Years of Machine Tools." It was published by the company partly in commemoration of the Connecticut Tercentenary Celebration and also to mark the one hundred and first year of the company's establishment.

The business of the Taylor & Fenn Co., as now conducted, is a link in a continuous chain that goes back to Levi Lincoln in 1834. While the company name has undergone several changes during this period, the same lines of activity have been followed and these have occupied the same site.

The chronology is as follows:

1834—Levi Lincoln.

1841—George S. Lincoln & Co. and Phoenix Iron Works.

1855—Lincoln & Co. and Phoenix Iron Works.

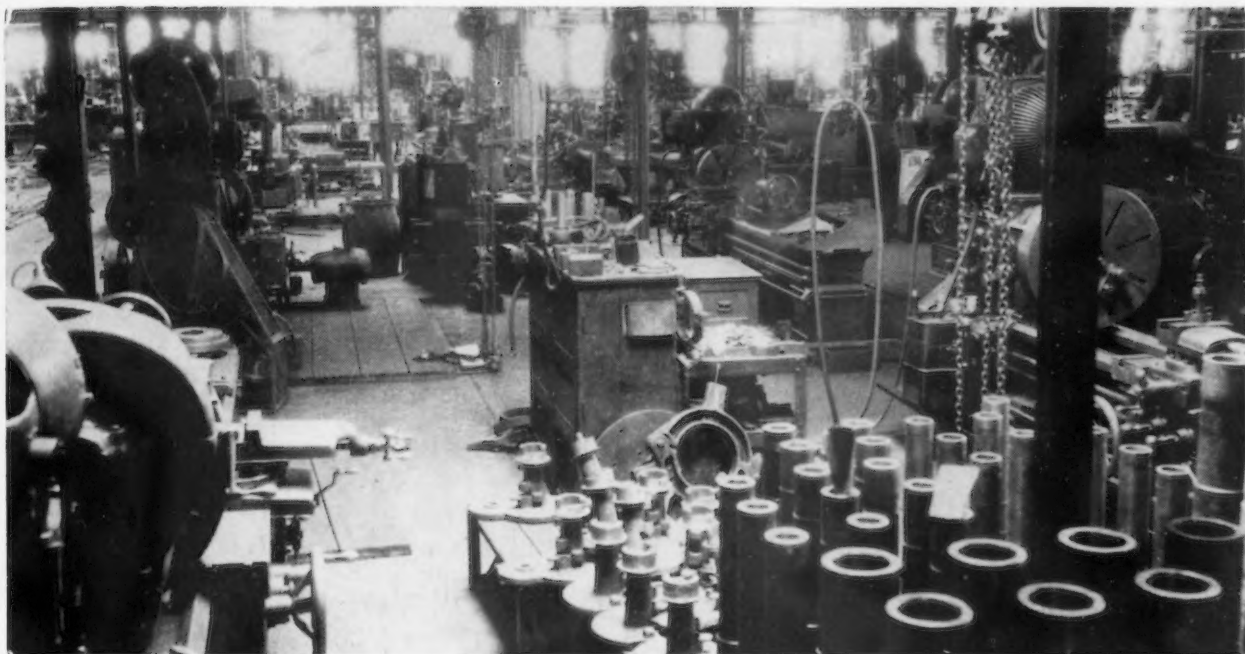
1898—The Lincoln Co. and Phoenix Iron Works.

1901—The Phoenix Iron Works Corpn.

1907—Taylor & Fenn Co.

Illustrations are given in the booklet of machine tools made by the company as early as 1840-50. The famous "Lincoln" Milling Machine, which made its appearance in 1855, is also shown as well as a number of later tools of early vintage. Among these is the first lathe designed for turning locomotive driving wheels. Modern machine tools made by the company are shown in contrast.

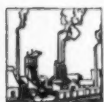
Altogether, this is one of the most readable and interesting little books that we have seen in some time.



GENERAL view of the heavy engine lathe department before rearrangement of the shop.

Gisholt Plant Revamped During Depression

By ROGERS A. FISKE
Western Editor, The Iron Age



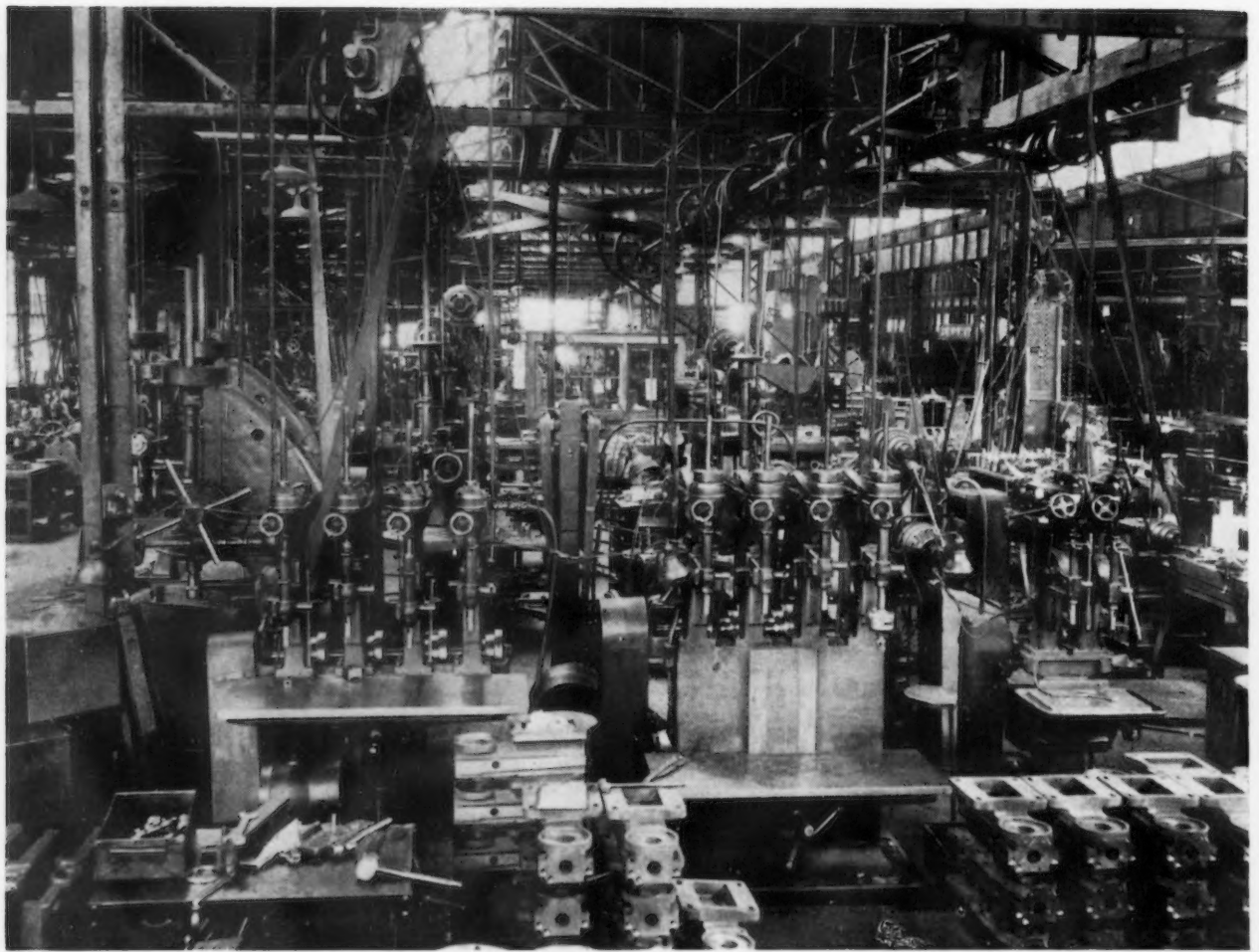
THE worst of the depression, as bad as it was, is proving a profitable experience to those manufacturers whose courage was not diminished by misfortune and who had the vision to keep the long range viewpoint before them. In the years preceding 1929 when most deliveries were delayed the general excuse for not making betterments and needed economies was usually to the effect that business was so pressing that the necessary time could not be taken. After the 1929 crash the excuse was that cash was tight, business poor, if not actually non-existent. So apparently there was no condition of business, good or bad, when the excuse makers could not sing a slumber song and thereby halt progress, either immediate or for the future day.

MANUFACTURERS that had the courage during the dark days of the depression to make needed changes in plant and equipment are now in an enviable position. The Gisholt Machine Co., Madison, Wis., is among those companies that utilized bad times to prepare for better times. Enlisting both white collar and shop men in its skeleton force, it undertook and completed a thoroughgoing rearrangement of its plant. The new layout has speeded up operations, reduced inventory, simplified planning and scheduling, reduced spoilage, eliminated unnecessary movement of materials in process, and lowered the cost of supervision.

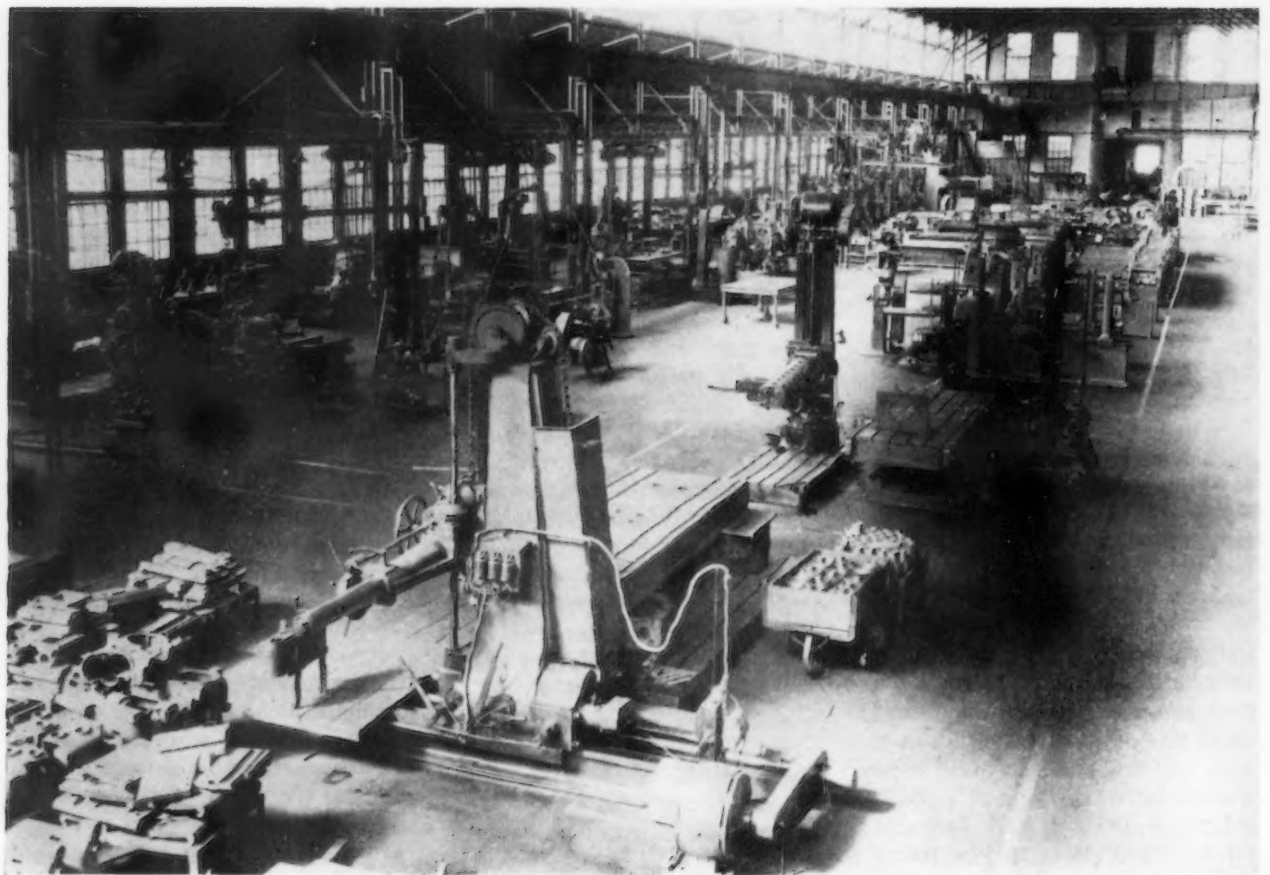
Fortunately, however, there were some executives who had the vision and the courage to see and to believe in better days ahead. Their wisdom is now being doubly repaid because not only are they taking advantage of the economies but they are more successfully battling the unforeseen hazards of higher taxes, wages, and the general rise in the cost of doing business.

No better example of fortitude in the face of great discouragement is afforded than that displayed by the management of the Gisholt Machine Co., Madison, Wis. It stood face to face with deferred improvement plans, an over-expanded plant, a fair portion of old equipment and an order book that was emaciated in accordance with the times which bore down on all industry.

The history of the company's plant and equipment properly



THIS is a typical view of a part of the old layout. Working space was at a premium.



NOTE the change. This is the new department for performing all operations on heavy work of miscellaneous character.

starts in 1907 when Gisholt purchased the American Turret Lathe Co., Warren, Pa. In 1915 it acquired the Madison plant of the General Electric Co. Then in 1917 there was constructed at the site of the main plant the Northwestern Ordnance Building, which was used for the manufacture of artillery for the United States Government. The end of the war made the ordnance building more or less a white elephant. As matters then stood Gisholt had the main plant

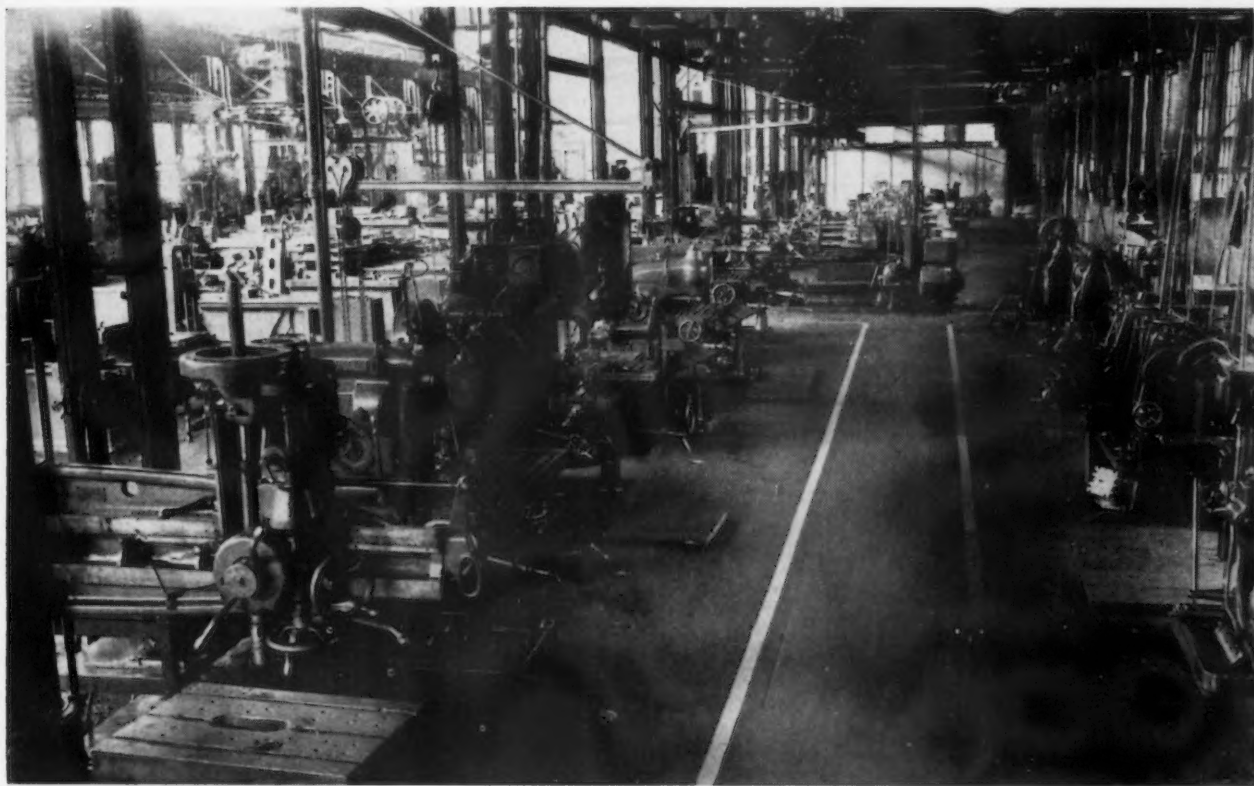
its equipment to the ordnance building. The actual moving cost was figured at about \$40,000 and recognition was taken of such intangible losses as deferred deliveries, and possible cancellations of orders as well as loss of new business during the transition period.

It was at that time that this company decided to drop out of the vertical boring mill field, and, instead of moving to the ordnance building, the electric plant equipment was gradually moved to the

been seeking for a number of years.

More Far-Reaching Changes Undertaken

The old plans were taken out for review and further study, and each day of study saw another drop in business so that expenditures for alterations seemed to be fading in the distant future. The plan finally evolved was to manufacture all small parts in one building (the original main unit) and send them all to one storeroom where they



THIS is the newly arranged department for the manufacture of light miscellaneous parts.

and three other units. More floor space was possessed than was needed.

The ordnance building was first transformed into a storage space. The distance between operations in Pennsylvania and Wisconsin led to the sale of the Warren property in 1920 and the removal of the equipment to the electric plant. This was the first step toward concentration of manufacturing facilities.

First Rearrangement of Plant Proved Unsatisfactory

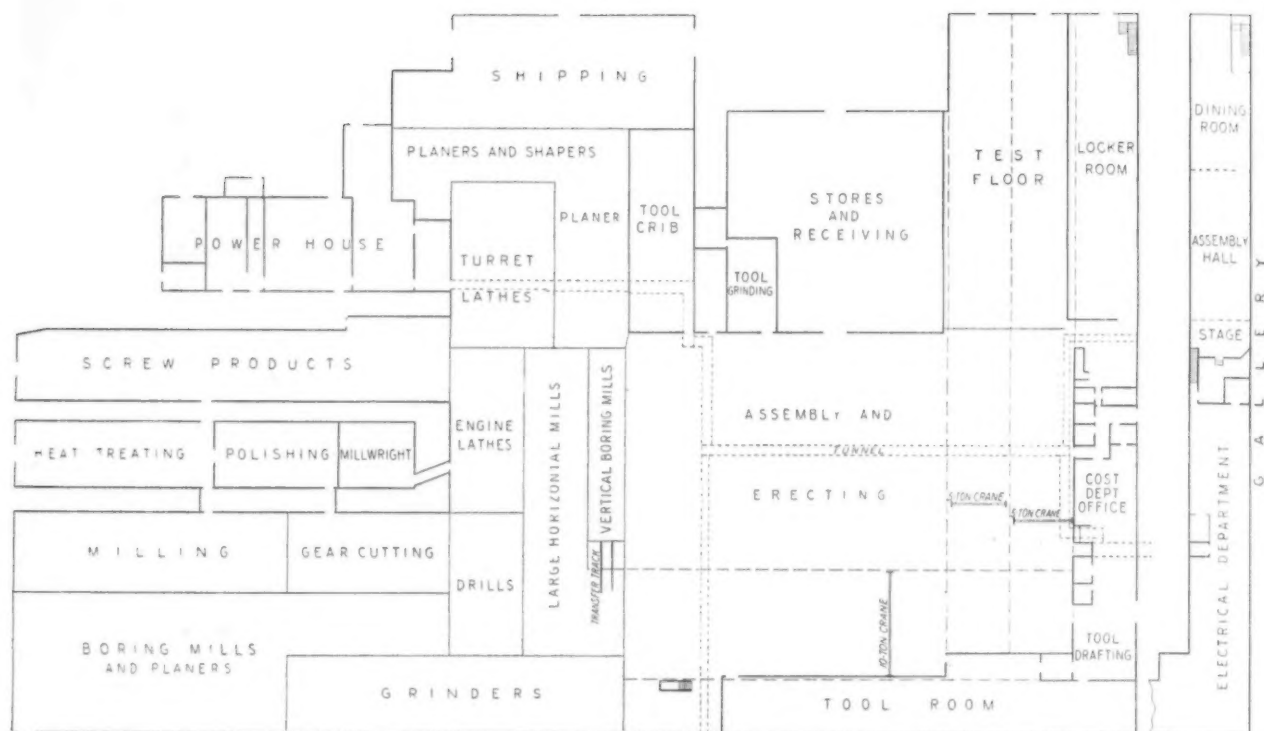
As early as 1928 a survey was made which disclosed the advisability of closing the electric plant and the thought then was to move

main plant, which it was then discovered became congested when business was good. However, the best of the situation was made until 1930, when business started to slacken. In an effort to take its own medicine Gisholt at that time purchased some new equipment as its contribution toward a revival of business.

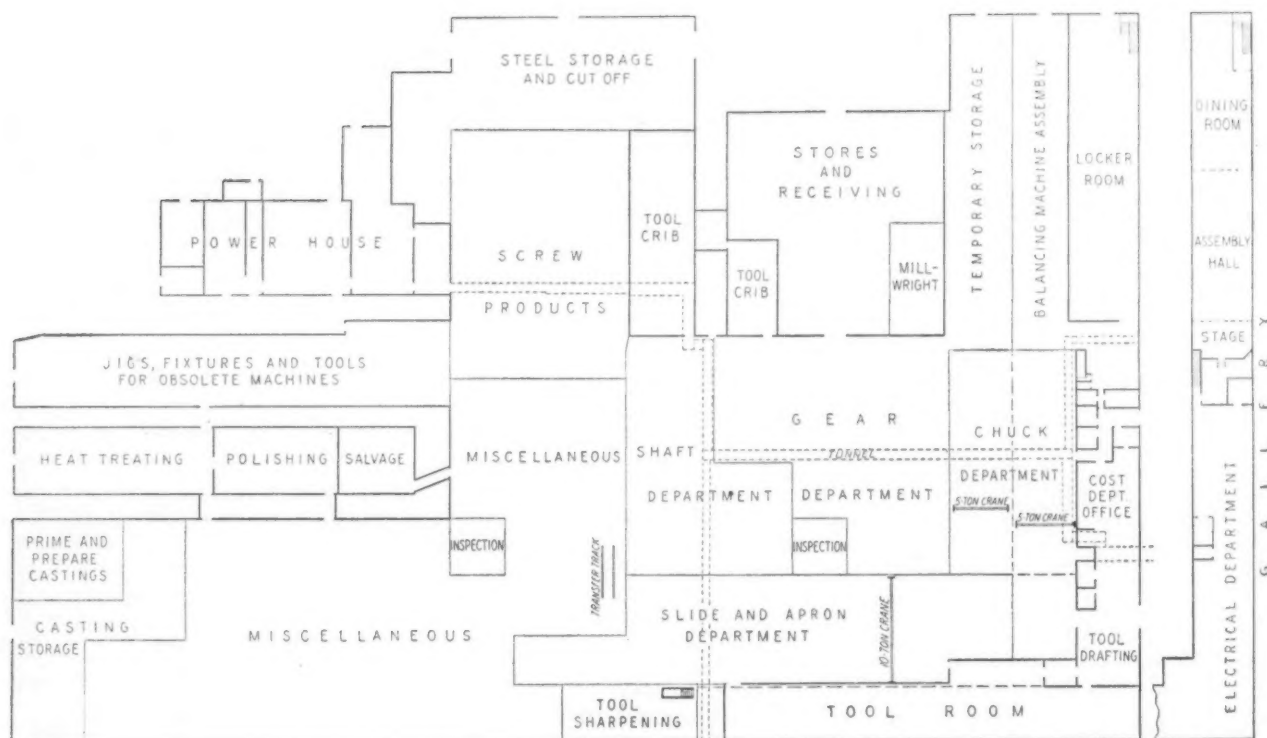
However, as business continued to drop away there was the pressing need for greater economies, and the moves that could be taken had to be such that cash position was not destroyed, and yet the changes had to be substantial and permanent and afford the long-range economies which the company had

would be inspected, after which they were to be moved to the ordnance building, which was to become an assembly plant. The ordnance building was also to accommodate bed machining, as well as paint booths, test floor and shipping department. Its nearness to the foundry greatly simplified the movement of bed castings. Relocation of bed machining carried with it the necessity of buying some new equipment.

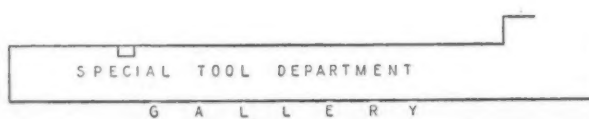
By the time these plans were completed business had dropped to the point where only a skeleton force was retained and even the office and engineering forces did not have enough to do to keep them busy.



THE old plan provided groups of machines according to the classification of work they performed. Loss of time in transport of parts was one of the penalties.



AS rearranged, all necessary machines are grouped in a department where a given part or product is manufactured. This reduced the inventory of parts in process.



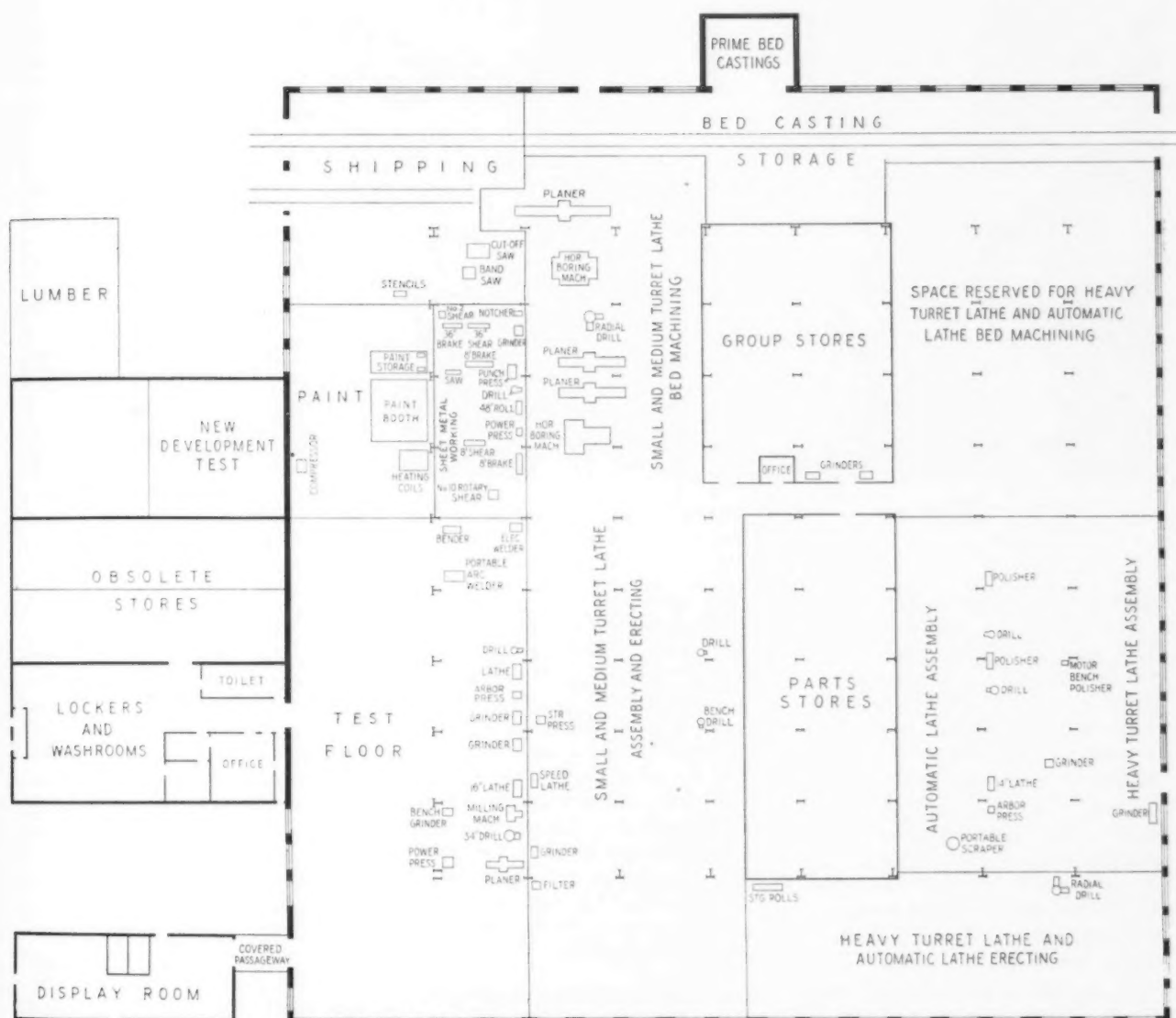
This is a situation which not only makes executives gray-headed, but each employee senses the condition and his thoughts and fears are depressing to the extreme. Will he have his job another day, or will he be the next one to be added to the scores of unemployed?

Skeleton Office and Plant Force Used for Moving

There was a way out if courage on the part of the management and

The plan was laid before them and the response was immediate and whole-hearted. Each of these employees dropped the fear of losing his job. Many of them saw chances to broaden their experience, to learn more about the shop and the product. In fact, the response was so spirited and the work so eagerly done that the quality and quantity of work performed undoubtedly far exceeded the best that could have been expected from

to business and yet to reduce it further meant crippled facilities for handling such business as did reach the company's books. But under the plan, an engineer, a clerk, or any other needed employee, could be withdrawn from the shop for a few days while he cleared up such matters as needed immediate attention at his desk. The result was better service than could otherwise have been given to customers. It should be noted that



THE ordnance building has been transformed into an erecting shop.

spirited cooperation on the part of retained employees could be enlisted. No skilled outside help could be brought in, but clerks, draftsmen, foremen, superintendents and the like had to put on overalls and many of them had to do manual labor, which was a new experience.

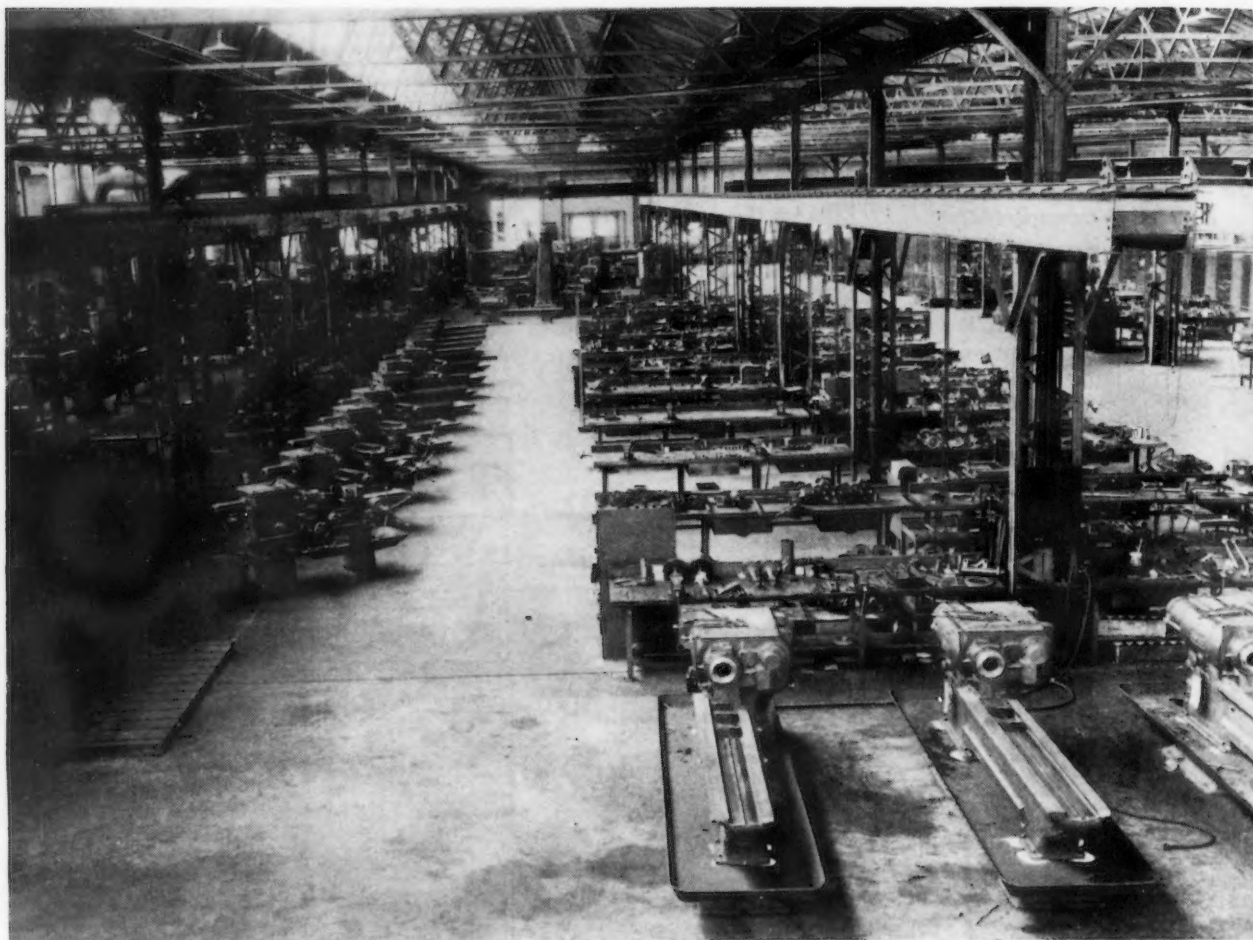
a hired crew. Also bear in mind that business was so slack that a more opportune time could not have been chosen. No fear then of deferred deliveries, cancellations and lost orders.

This plan had a further advantage. The overhead, as measured by personnel, was out of proportion

when a man was temporarily withdrawn from the shop he was more than pleased to get back to the overall job.

Assembly Floor Moved to Former Ordnance Building

The first task undertaken was to move the assembly floor from the



NEW assembly shop is practical from every viewpoint, and it is an important factor in cost reduction.

main building to the ordnance unit. The stores were likewise moved. This gave some clear work space in the main shop where every machine tool had to be moved. Each machine was inspected, repaired if necessary, and repainted before placing it in its new location.

Many old countershafts came down and most machines were changed to individual motor drives. A few exceptions to the above move were some old especially designed machines, some of which operate only a few hours in a year.

A byproduct of the shift was the disclosure of parts and appliances, many of which were so obsolete that their identity was in doubt. All such pieces were accumulated in a store room, where they are gradually being cataloged, and those that are useless are being discarded. Therefore, this plan also had its advantage as a grand housecleaning, the import of which had not been fully appreciated until the various pieces accumulated in such numbers that a special storage space became necessary.

The plan also called for elimination of the old system of grouping machines by the classification of work they performed. That is, no longer are all milling machines located in one department, a layout which wasted time and money by excessive cross and back hauling and by an excessive inventory of parts in process. The old plan also divided responsibility to the point where "buck-passing" was a favorite sport. Spoilage was also excessive and manufacturing schedules were often delayed.

Machines Grouped According to Product Made

Under the new plan machines of all necessary kinds are grouped in a department to make a given product. For instance, in the gear department are all the types of machines needed to make gears. The one exception to this idea is that a central heat-treating department was retained. A miscellaneous manufacturing department was set up to handle special parts, or those parts which are sent

through as special orders and in small lots.

All told, 25 old machine tools were thrown out during that period when business was getting steadily worse. Replacements were ordered to the total of \$190,000. Now that business has improved, it is frankly admitted that had the changes not been made in the almost total absence of business it could not now be done so quickly, so satisfactorily, or for so little cost. If the money-saving changes had not been made before business improved many of the old practices would in all probability still be in use and at best only part of the present economies would be realized. Also, an adequate organization was maintained so that there has been no lost motion in swinging upward with the business tide. This, incidentally, is another economy.

Work Expedited by New Arrangement

Work is now flowing through the shop at a faster gait. For certain



A PORTION of the new chuck department. Light, air and roominess add to its worth as a manufacturing space.

types of machines the old schedule required six months from order to shipment. The same units now require not to exceed four months. The inventory is appreciably lower than formerly. Planning and scheduling are much simplified. Each

supervisor has full responsibility and buck-passing is out of date, as well as useless. Spoilage has been reduced. One supervisor now handles more easily and effectively the work that formerly required from six to ten men. Savings are also

accruing as a result of the installation of new equipment, and costs are lowered by the elimination of unnecessary movement of materials in process. Courage displayed at the bottom of the depression is now paying dividends.

Urges Greater Use Of Steel in Dams

MEMBERS of the Metropolitan section of the American Society of Civil Engineers were urged to develop wider use of steel frame construction for large dams by Dr. Otis E. Hovey, consulting engineer and national authority on steel structures, at a meeting held last week at the Engineering Societies Building, New York.

Safety, accuracy of load resistance measurements, constant inspection during all processes of manufacture and construction, and

economy, were cited by Dr. Hovey as being among the factors in favor of the use of steel frame construction for permanent dams.

"Loads on dams are the most definite of any with which the civil engineer has to deal," Dr. Hovey declared. "Fluid pressure," he continued, "is transmitted equally in all directions so that the effect of water pressure upon a dam, either vertically or horizontally, is not subject to discussion.

"Steel," Dr. Hovey added, "is

made and rolled at the mills and fabricated at the shops under full control. There is no uncertainty concerning the uniform quality of the material or in its application in the structure. A steel frame dam can be designed so that its principal members resist the water pressure in the most direct manner and with no uncertainty as to their action. The loads on the foundations are definite. Consistent factors of safety against overturning and sliding can be maintained."

The Welding of Alloy Steels—II

By DR. J. C. HODGE
Babcock & Wilcox Co.,
Barberton, Ohio

IN this part of his paper before the American Welding Society, Doctor Hodge outlines briefly the metallurgical principles governing the welding of stainless steels and irons. Part I, which covered the welding of low alloy structural steels, was published in THE IRON AGE of January 30, page 20.

quality of corrosion resistance or stainlessness is imparted by adding chromium to the steel in varying quantities. In general the higher the chromium content the greater the corrosion resistance of the alloyed steel. In order to appreciate the welding characteristics of these steels it is necessary to understand their metallurgy and, since the iron-chromium-carbon alloys depart considerably from the general be-

havior of alloy steels as predicated in our general constitutional diagram for alloy steels of Figs. 1 and 2 (see Part I), it is necessary to consider the constitutional diagram of the iron-chromium-carbon alloys as shown in Fig. 9.

This diagram, according to Bain, shows the stable structural conditions of any of the straight chromium irons throughout the temperature range. For a given carbon



WE may now consider briefly the welding of the second group of steels which are welded in large commercial quantities—the stainless steels and irons. The

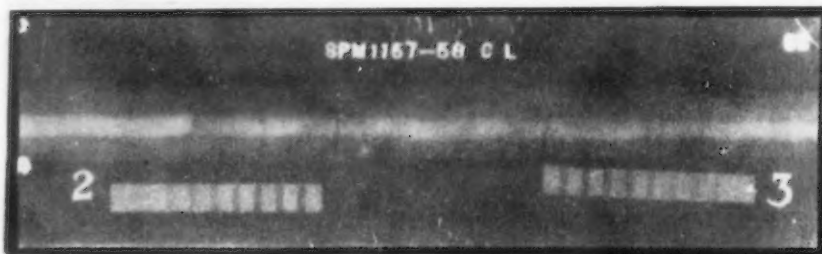
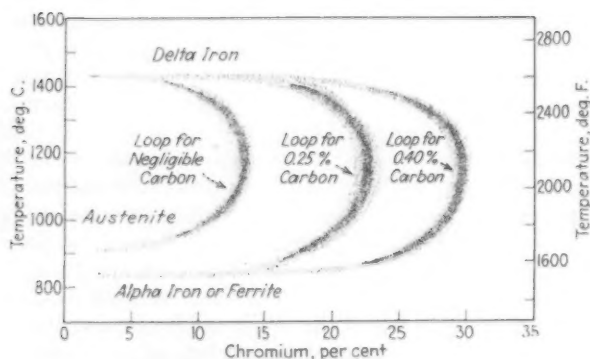


FIG. 10—X-RAY print of 4-6 per cent chromium-molybdenum welded joint, showing numerous transverse cracks across the weld, due to lack of preheating prior to welding.



AT LEFT

FIG. 9—Diagram, according to Bain, showing the effect of increasing carbon in extending the austenitic loop in the structural diagram to regions of higher chromium.

content the effect of increasing the chromium is to raise the alpha to gamma transformation temperature and to lower the delta to gamma, so that eventually a chromium content is reached at which the two transformation lines merge, forming what is termed the "gamma loop." Above this chromium content the

irons or steels are transformationless, i.e., single-phase alloys. Grain refinement by reason of recrystallization is therefore impossible. Heat treatment for change in grain structure and in physical properties is not possible, the only effect of high temperature treatment being an enlargement of the crystal or in grain growth. Below this chromium content, where the two transformation lines merge to form the austenitic loop, the chromium-iron alloys are heat treatable and hardenable. The effect of carbon, manganese and nickel additions to the chromium irons is to enlarge the gamma loop in the manner as shown in the diagram for carbon. The effect of aluminum, silicon and titanium additions is to depress the gamma loop.

Welds in the lower chromium range will therefore be subject to air hardening but may be heat treated and varying physical properties obtained. Welds in the higher chromium series beyond the gamma loop will be non-hardenable but brittle. Between these two will lie a borderline group of alloys which are not subject to marked air hardening but which may be heat treated to confer some degree of toughness upon the weld. These alloys will lie immediately below the chromium content necessary for merging of the two transformation lines but where the lower critical point is sufficiently high to prevent excessive air hardening.

The following brief discussion of the welding of the various types of stainless steels and irons has been largely extracted from a more complete presentation of the subject by the author in E. E. Thum's "Book of Stainless Steels," second edition.

4 to 6 Per Cent Chromium Steels

The 4 to 6 per cent chromium steels, either with or without the usual tungsten or molybdenum additions, possess distinct air hardening tendencies, and as carbon enhances their air hardening propensities, the lower carbon ranges of the alloy are generally chosen where welding is to be considered. Experimental data indicate that titanium or aluminum additions may be used to prevent or diminish excessive air hardening.

Welds from electrodes of the same analysis will crack unless preheating is resorted to (Fig. 10). Cracking of the weld metal may be prevented by preheating the

parts to be welded, either locally or uniformly, to a temperature of 300 to 400 deg. F., and maintaining at temperature until completion of the welding and placing in the annealing furnace.

Fig. 11 shows the variation in hardness across a welded joint in the as-welded condition and after heat treatment. Maximum softness of the weld is attained by a full anneal at 1600 deg. F., followed by slow furnace cooling at a rate of 50 deg. F. per hour until a temperature of 1200 to 1300 deg. F. is reached, at which the part may be removed from the furnace and air cooled. Satisfactory softness for most purposes may be achieved by a lower temperature anneal at 1300 deg. F.

Metal arc welded joints are being produced to all requirements of the A.S.M.E. Boiler Code for class 1 welding. Fig. 12 shows a bend test specimen from a large number of production welded test plates, where the specimen has

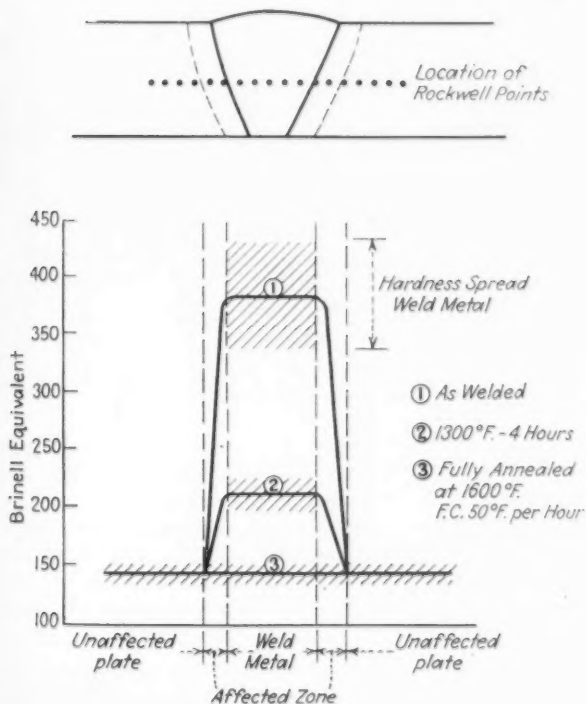


FIG. 12—Bend test of 3/4-in. thick weld specimen, 4-6 per cent chromium-molybdenum. Elongation of outer fibers during bending, 67 per cent. (Weld fully annealed).

FIG. 11—Hardness across a 4 to 6 per cent chromium, 1/2 per cent molybdenum welded joint: (1) as welded; (2) annealed at 1300 deg. F., 4 hr.; (3) fully annealed at 1600 deg. F. Furnace cooled at 50 deg. F. per hour.

been bent flat on itself with an accompanying elongation of the outer fibers of the weld metal of 67 per cent.

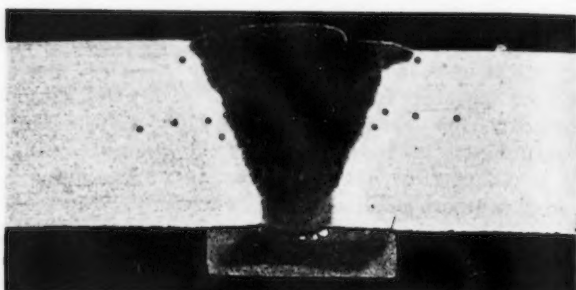
Typical macro-structures and micro-structures are presented in Fig. 13.

12 Per Cent Chromium Steel

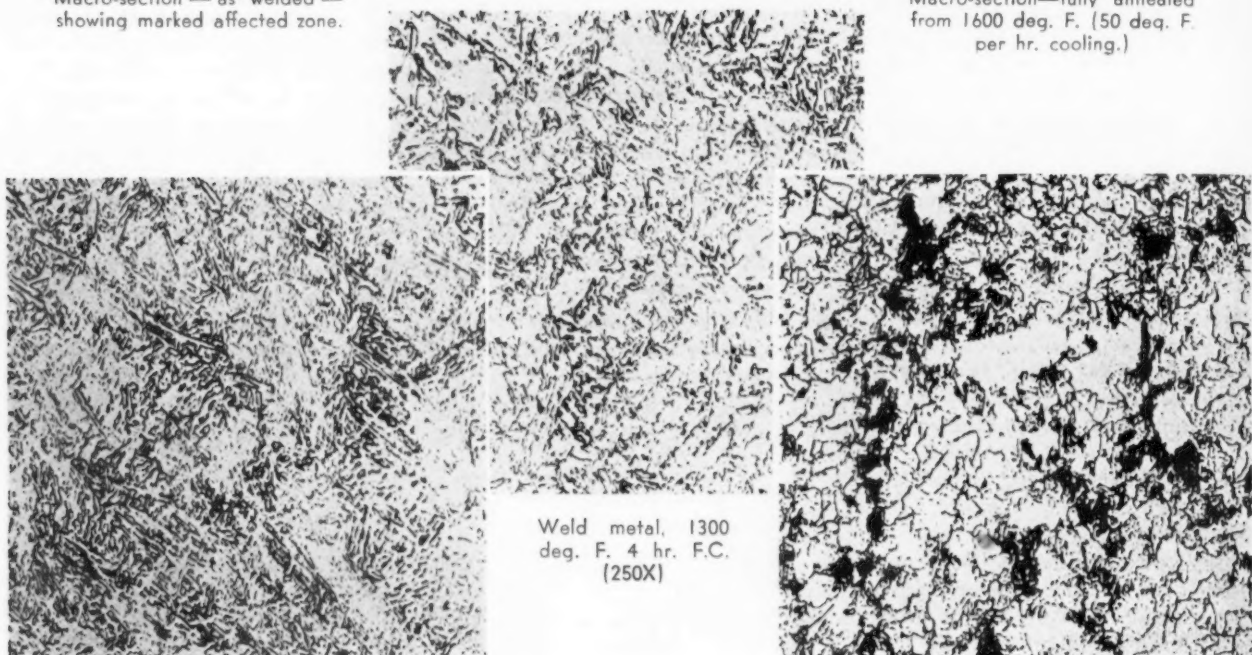
The 12 per cent chromium steel is generally considered to possess a chromium range of 11 to 14 per cent, with low carbon up to 0.15 per cent maximum. The cutlery steels may also be considered in this group, with higher carbon contents and sometimes higher chromium contents than the range given above. Even the low carbon type is a martensitic steel (Fig. 14A) and, with its pronounced air hardening, may be considered as possessing only limited weldability.



Macro-section — as welded — showing marked affected zone.



Macro-section—fully annealed from 1600 deg. F. (50 deg. F. per hr. cooling.)



Weld metal, 1300 deg. F. 4 hr. F.C. (250X)

Weld metal—as welded (250 X)

Weld metal, fully annealed 1600 deg. F. (50 deg. F. per hr. cooling)

FIG. 13—Four to 6 per cent chromium, $\frac{1}{2}$ per cent molybdenum.

To successfully weld these steels requires preheating to a high temperature, with heat treatment following immediately after welding.

With extremely low carbon (carbon 0.07 per cent maximum), the air hardening of the alloy is minimized and the use of welded structures of this low carbon steel in the as-welded condition may be considered (Fig. 14B).

Considerable quantities of a modified analysis possessing little or no air-hardening characteristics, i.e., 13 per cent chromium, $\frac{1}{4}$ per cent aluminum, are being used commercially for welded structures in the as-welded condition.

16 Per Cent Chromium Irons

Alloys with chromium from 15 to approximately 18 per cent and with carbon contents of below 0.15 per cent represent a transition zone

from the pearlitic or martensitic alloys below this chromium range to the fully ferritic alloys above this range. They are susceptible to heat treatment and at the same time do not air harden appreciably.

While it is possible to metal arc weld this group at normal temperature, preheating, at least locally, to approximately 200 deg. F. is advisable. In the as-welded condition the welded joints are extremely brittle and, where highly stressed in service or subject to possible impact, should be annealed at 1450 deg. F.

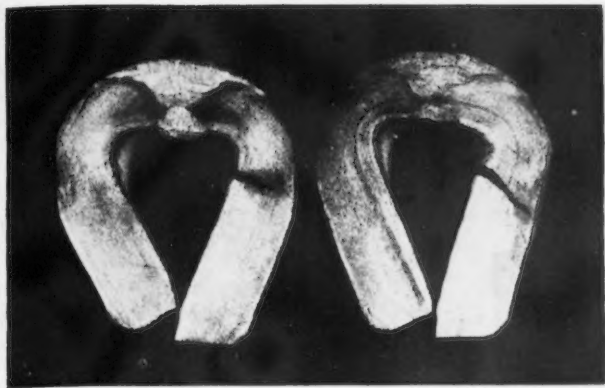
In the annealed condition the welded joints possess satisfactory ductility and impact resistance. The toughness of the weld will depend largely on its chromium content, the impact resistance of the weld metal dropping sharply at chromium contents of above approximately 17.25 per cent.

Typical macro-structures are shown in Fig. 15.

Chromium Irons Above 18 Per Cent

Chromium-iron alloys above 18 per cent and with normal carbon contents are entirely ferritic. These single-phase alloys are not responsive to heat treatment, do not air harden and are subject to grain growth at elevated temperatures. The weld metal and the affected zone of the base metal are therefore extremely coarse grained and brittle. The welds cannot be toughened by heat treatment and the alloys in this range may be considered as possessing extremely limited weldability. The more important chromium alloys of this group lie within a range of 26 to 30 per cent chromium.

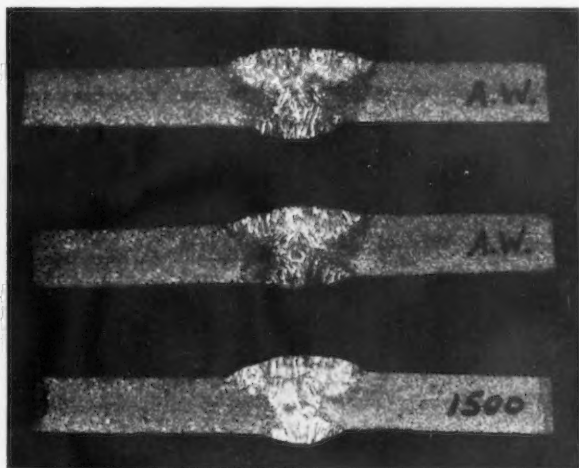
In welding these high chromium irons, preheating is again neces-



H EAT-TREATED specimens (1450 deg. F., F.C.). Failure in base metal. Brinell: Affected zone, 180-240; unaffected plate, 150-170.



A S welded specimen with failure through affected zone. Brinell: Affected zone, 360 unaffected plate, 150-170.



M A C R O - S E C T I O N S across weld. Top and middle: As welded; bottom: Furnace cooled from 1500 deg. F.

FIG. 15—Sixteen per cent chromium iron.



FIG. 14A—Twelve to 14 per cent chromium iron. Martensitic structure of weld metal (13 per cent Cr, 0.15 per cent C); as welded condition. Brinell: weld metal, 420-480; affected zone, 500.

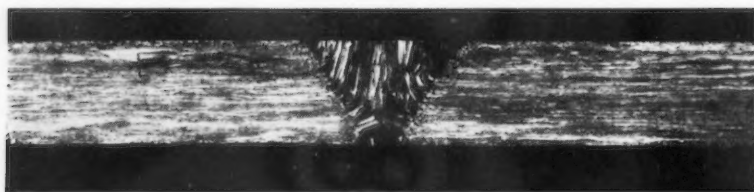
o o o

AT LEFT

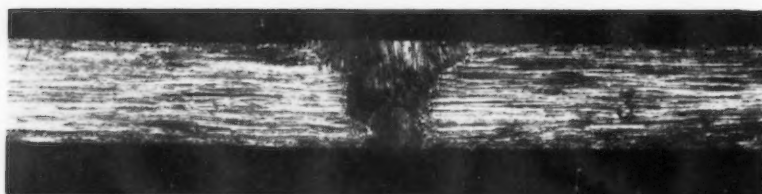
FIG. 14B—Bend test specimens of low-carbon, 13 per cent chromium welds (C 0.07 max.). Welded with 16 per cent chromium electrodes



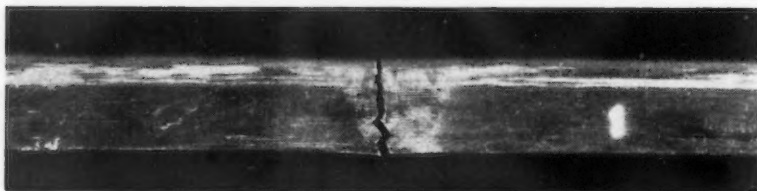
M I C R O S C O P I C crack in weld due to lack of preheating.



Electrode A.



Electrode B.

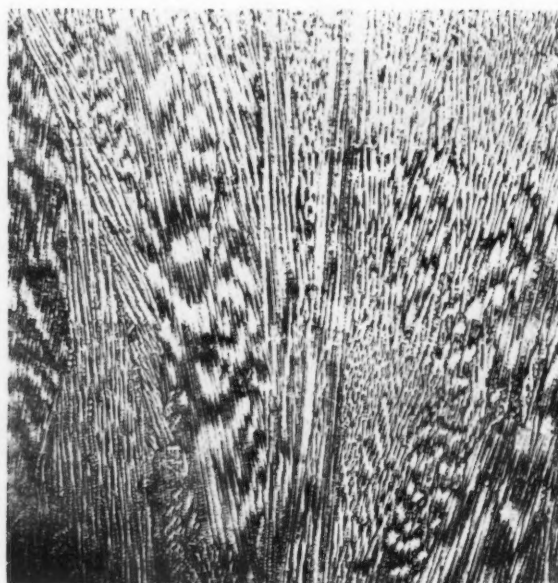


Fractured bend test specimen showing no ductility.

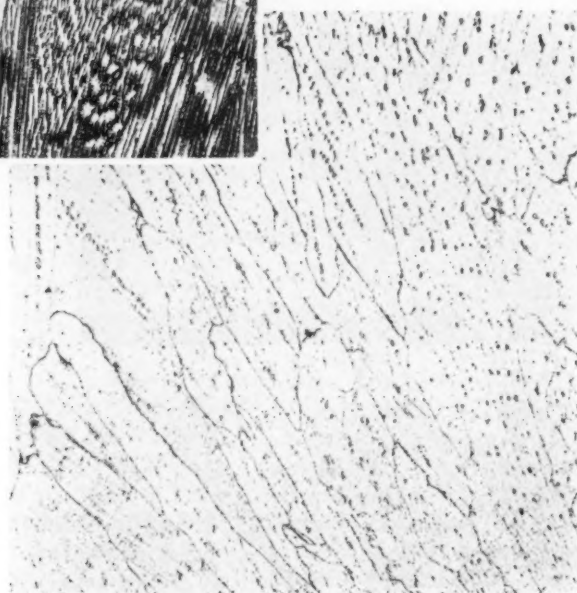
FIG. 16—Twenty-eight per cent chromium iron.



Macro-sections, transverse to weld, and longitudinal along weld, showing dendritic structure of these weld metals.



Dendritic structure of austenitic weld metals (35x).



Large grains of austenitic weld metals (100x).

sary, and residual welding stresses should be removed by an annealing treatment. Fig. 16 shows typical macro-structures of a metal arc weld on 28 per cent chromium iron. The macro-section captioned "Electrode A" represents a weld made with electrodes of normal 28 per cent chromium-iron analysis, while the section captioned "Electrode B" was made with an electrode of

FIG. 17—Austenitic nickel-chromium alloys.

high nitrogen content, the high nitrogen in the weld metal apparently assisting to some extent in controlling the grain size of the weld metal in the same manner as has been reported for castings of this analysis.

Austenitic Chromium-Nickel Alloy Steels

This group comprises a large number of chromium-nickel-alloy steels with varying chromium and nickel contents, such as 18-8, 19-9, 20-10, 23-11, 25-20, etc. Alloy modifications of several of these exist such as 18-8 with 2½ per cent silicon or 3 per cent molybdenum. Other alloy additions may be employed such as titanium or columbium for stabilizing purposes. All of these austenitic alloys may be readily welded. The effect of welding on the parent metal will vary considerably for each alloy, and the necessity for heat treatment and the response of the affected zone and the weld metal to heat treatment must be individually considered.

All of the austenitic welds of this group possess a marked dendritic structure as shown in Fig. 17. The weld metal, however, is tough and ductile.

The foregoing discussion has been necessarily limited as to details. It was impossible to cover in detail the welding of each individual alloy steel. It is hoped, however, that the article will convey the basic metallurgical principles governing the welding of alloy steels.

Changing Conditions Call for Inventory of Man-Power, Machines and Methods*

By A. C. DANEKIND

*Chairman, Factory Equipment and
Practice Committee, General Electric
Co.*

ALL manufacturers, regardless of character of production or volume of sales, are seeking an accurate answer to a common question: "Where are we in manufacturing?" As an elaboration of this thought, let us depict a hypothetical scene which may very well have been actually enacted in any manufacturing concern.

Shortly after the first of the year, the general manager of our hypothetical manufacturing concern can be seen, pacing back and forth in front of his desk. Since, ordinarily, this manager was unruffled, his associates were puzzled as to the reason for their superior's

frame of mind, until finally the head accountant awoke to the fact that the final inventory summary for the year would be submitted to the president that day. There were suspicions of big discrepancies in the inventory, and that would seriously affect the year's profit showing. This was explanation enough for the general manager's agitation. Shortly after the inventory report was made available, the president summoned his general manager.

Haven't Inventoried the Right Things

"What do you think of this report?" asked the president, whose complete calmness reflected every evidence of feeling that all was well—the inventory was sound.

"If you want to know what I think, frankly," replied the general manager, "this particular report is favorable, and we're to be congratulated on our stock situation. But, with equal frankness,

I'll say that, after all, we haven't inventoried the right things."

"Just what do you mean?" flared back the president.

"Just this," said the general manager. "You have here an accurate stock inventory. It is important, to be true, but not nearly as important as an accurate inventory of men, machines and methods. What did we do about these in 1935? Where do we stand on these three factors, and have we any fair evaluation of them which can compare at all with the completeness of our stock inventory?"

The president, after a moment's thought, realized the significance and importance of this argument.

"You're right," he said. "Let's take such an inventory, starting right now, and because we've neglected it during the depression, let's go back over those years, and see just where we stand. Let's make a real inventory of our men, our machines and our methods."

*From an address by Mr. Danekind on "Improvements In Manufacturing Methods," at the Iron, Steel and Allied Industries Conference, held at Del Monte, Cal., Feb. 6.

Lacking more definite information, I am assuming that each of you have made an inventory or evaluation of your man-power, and of machines and methods, and you now wish to compare notes on our common problem: "Where are we in manufacturing?" I shall endeavor to answer this question as we in General Electric view it, under three headings—Men, Machines, and Methods.

Man-Power Evaluation Basic

"Men" is the first point for discussion for the reason that man-power is a step primary to an evaluation of the other two factors. What has happened to managers, workers and the entire man-power of industrial concerns during the past few years? Probably the most fundamental change in the man-situation has been created by the education men have received. Throughout our respective organizations, our man-power has been exposed, and has exposed itself, to a veritable barrage of fact, opinion, and theory, which has run the gamut from forms of cooperate organization to the individual's rightful share in profits. This barrage of opinions, proposals from government, from business organizations, from labor unions, and from individual proponents of fantastic schemes has reached our entire man-power through the medium of radio, newspaper and mass meeting, as well as from many sources less direct.

For you to feel, as once you could, with complete complacency, that your men are with you and, consequently, you need not be concerned as to the effect on them of this hodge-podge of thought, is, frankly, a symptom of "Management Ostrichitis"—sticking your head in the sand, refusing to face facts. The new conceptions of men as to their privileges and their responsibilities, which have been a concomitant of the New Deal, is one of the biggest single factors in management today. An inventory of man-power will reveal new and radically different man-attitudes as compared to those of but a few years ago. Management must seek an answer to this situation and opinion in the General Electric Co. is that it is two-fold.

- 1.—Adoption of policies of selection of men, job evaluation, wage payment, profit-sharing,

training, rating, advancement, and employment stabilization that adequately meet present-day requirements of enlightened organization, with utter fairness.

- 2.—An educational program which reflects these policies in clear light against the fog of mental confusion in economic thinking, caused by contradictory theories and half-truths.

These two steps form an integral part of our program, and through them we feel we can reasonably expect real man-effectiveness all the way from top management to the lowest paid worker in our shops.

Man-Selection Not to be Taken Lightly

The problem of man-selection is not one to be taken lightly. All concerns have had a more or less fixed policy for years, and it is important that responsibility for its promulgation be in the hands of men capable of using fine discrimination as to reinstatement rights, attitudes, and cooperative spirit. We use aptitude tests to a considerable degree, with the feeling that we are avoiding thousands of dollars waste on relatively inefficient workers and supervisors.

Modern job-evaluation methods must be definite and fair for men are not inclined to take, without question, the pay that their management offers. Notes are compared—executive with executive, worker with worker, and industry with industry—with cost-of-living statistics as a reference. We consider it of much importance that basic fundamentals and frequent adjustment of comparative job values be absolutely sound.

Wage-rate responsibility to a community, industry, or to society cannot be avoided. We have carefully considered these factors as a result of NRA, for in spite of the fact that NRA as an established institution has passed, the social consciousness of the American people is constantly growing. Man-problems of selection, job evaluation, wage rates, and stabilization of employment might well be the cause of definite embarrassment unless policies are generally in accordance with the best social consciousness of the day. The

management which waits for government or society to force its hand is at a severe disadvantage in relation to its man-power. It is reasonable to suppose that social-security laws will eventually be enacted in every state, and our objective is to be in a position whereby we may justly point with pride to what we have done before compulsion made action necessary. An accurate evaluation of man-power is more important today than an inventory of stock.

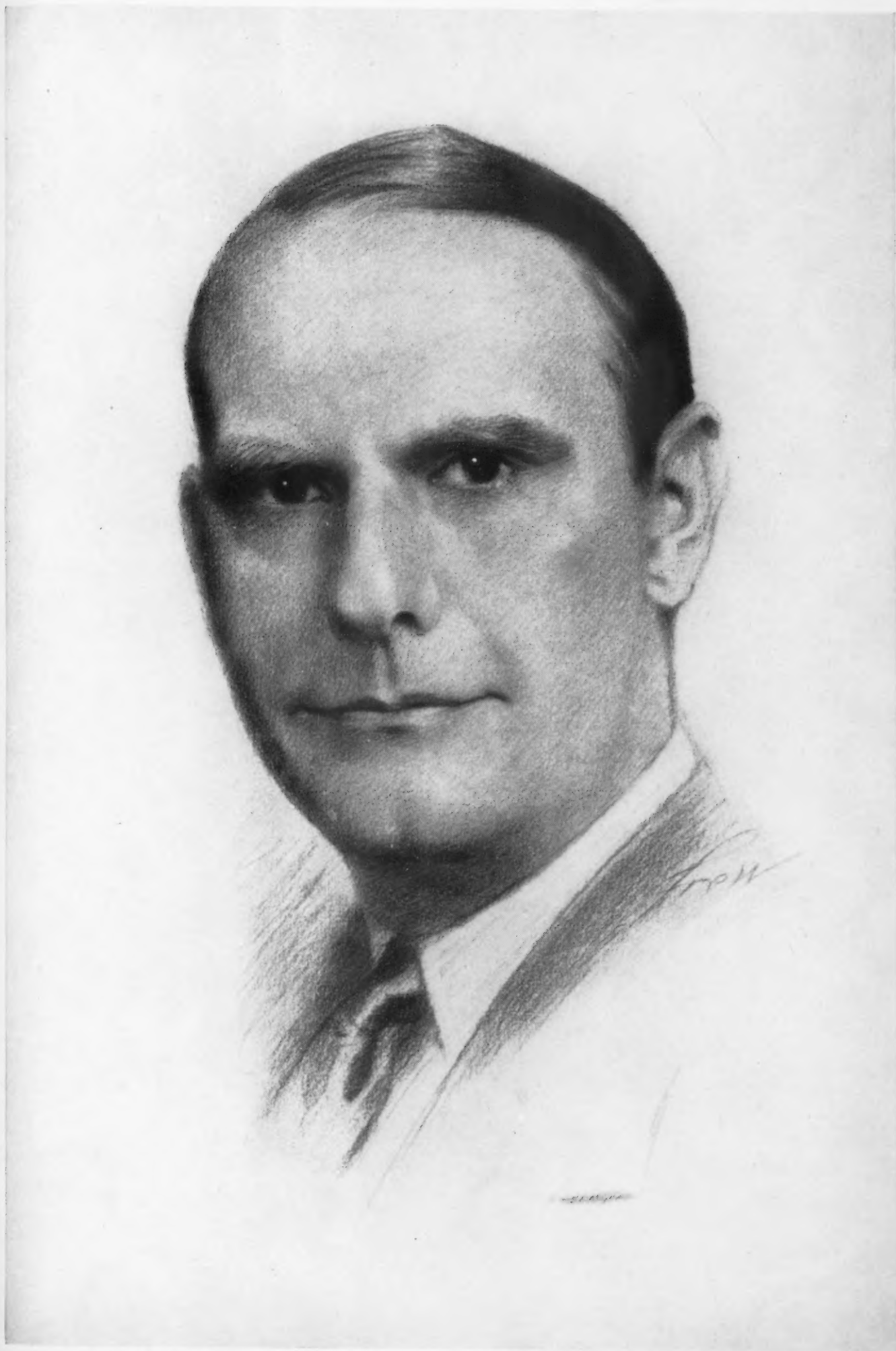
Time does not permit a detailed discussion of General Electric's conceptions of training men and checking their progress by means of a well-considered rating system. In this regard, we feel it is an utter fallacy to be misled by all the current agitation for security. The average American worker—be he a factory worker, clerk, supervisor, or a department manager—is essentially an individualist, and as such, he demands opportunity as well as security. This desire can only be fulfilled by a definite program designed for development of each individual's capabilities, according to his ability, and supported by a sound rating system.

Education an Answer to Labor Question

Education is our answer to the labor question. Since most labor difficulties have their roots not in high-sounding economics but rather in men's individual grievances we have always felt strongly against a show of unjustified force. We have a definite policy whereby grievances gain immediate and full expression—management's point-of-view is made clearly available to labor, and labor's viewpoint is made clearly available to management. The average worker will listen to reason, and there is much to be gained through frankness. We consider it of utmost importance to maintain an unobstructed channel of thought that reaches from top management to the lowest paid workers in our factories.

Inventory of Machines

"Machines" is the second point for discussion. An accurate inventory of this subject should reveal the degrees of adaptation and obsolescence. When a concern like General Motors makes a public announcement to the effect that \$50,000,000 is to be spent on new manufacturing equipment, a posi-



WILLIAM L. BATT, president SKF Industries, Inc., and president of the American Society of Mechanical Engineers.
Drawn by John Frew for The Iron Age.





tive conclusion is inevitable—this company, like many others, is determined to remedy the deficiencies built up during the depression period. It is very important that usefulness of manufacturing machinery be determined on the basis of its adaptation in meeting 1936 purposes. General Electric has given this subject serious consideration as evidenced by the brief discussion which follows, much of which is drawn from an article under my name published in the special Machine Tool Issue of THE IRON AGE on Sept. 5, 1935. [In this part of his paper, Mr. Danekind specifically discusses policies and practices relating to single vs. general purpose equipment, replacement as a result of "technical obsolescence," internal transfers and replacements, maintenance, and the keeping down of overhead, which as he states, were covered in his article in our special Machine Tool Show issue.—Editor.]

Problems to Be Solved in Inventory

"Methods" is the third point for discussion. All manufacturers are interested in obtaining more efficient manufacturing methods. Such an inventory is obtainable only in the shop and, unless accurately evaluated and maintained at an efficient level, a sales force becomes definitely handicapped, for sales prices obviously depend on your costs as compared with competitors' costs. Regardless of the line of manufacture in which you might be interested, it is all important that continuous and exhaustive cost reduction efforts be exerted with the common objective of improving methods. This is a broad subject which hardly permits of a detailed discussion at this meeting. The more important phases which might well be treated in this discourse would include machining methods, handling methods, assembly methods and job study.

Regarding machining methods, a fundamental principle of improvement is involved in concurrent operation as it applies to your processes. Each operation should be studied in minute detail with this principle in mind. The actual proportion of machining time as compared to that spent in handling work in process should be definitely established. A study should be made of the number of machines a man can efficiently

operate concurrently, and also whether or not all necessary operations can be performed on one machine where two machines are now being utilized. These are representative problems which should be solved in compiling a methods inventory.

Handling and Assembly Methods

Regarding handling and assembly methods, the opinion is too frequently offered that Ford's very efficient manufacturing arrangement is made possible only because of a natural and continuous flow of production. While it is an undisputed fact that automotive manufacture is a highly specialized job which lends itself particularly well to mass production lay-outs, many of the fundamentals are quite identical with those involved in any line of manufacture. A cost reduction effort is not complete until a sincere endeavor is made to adopt the principles of progressive assembly to your own requirements. Too many manufacturers are satisfied with the conclusion that their work is different, but surprising results are frequently possible where an approach to more efficient handling and assembly methods is made with the objective: "It can be done."

Made Use of Motion Study

Regarding job study, the General Electric Co. is making wide

use of motion study analysis in establishing fair and accurate time standards. This is a comparatively new science and to utilize it effectively requires wholehearted acceptance on the part of employees—an acceptance which must be based on that relationship of confidence to which I referred at the beginning of this paper. A fair day's pay should be the just award for a fair day's work, and the measure of what constitutes a fair day's work can, in most cases, be accurately established through motion study analysis.

We are at a point of great development from depression neglects, and a present-day manufacturer can only expect progress and prosperity when he really knows where he stands in relation to the definitely changed conditions with which he must contend.

Manufacturing is far more fascinating, as well as more challenging, than ever before. Fast-moving changes have taken place in human relationships, in mechanical equipment and in manufacturing methods. All factors involved must be thoroughly analyzed, for in no other manner can conclusions be sound. A yearly inventory or evaluation of men, of methods and of machines offers a means of obtaining a clear understanding of conditions.

Stewart Iron Works Is 50 Years Old

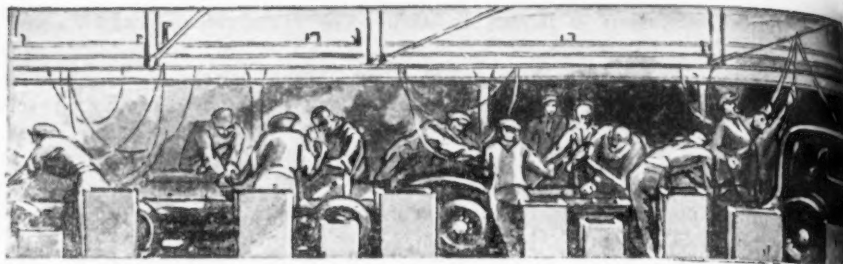
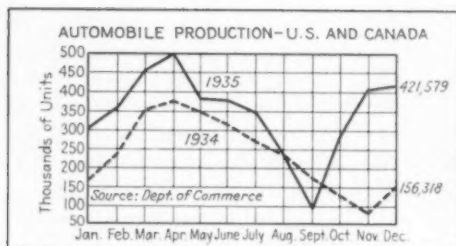
FROM a small shop in Wichita, Kan., to a plant, modern in every respect, covering 350,000 sq. ft. of floor space in 50 years, is the record of the Stewart Iron Works Co., which this year celebrates its golden anniversary. Since 1886 when R. C. Stewart and his brother saw possibilities for profit in the manufacture of iron and wire products, four generations of the Stewart family have been engaged in the building up of the business which today ranks as one of the largest manufacturers of steel picket fencing.

Among its best known products are: wire mesh partitions, window guards, folding chairs, folding

gates, settees, railing and miscellaneous iron and wire work. Its best known product, however, is fences.

G. P. Torrence to Address Engineers

THE Engineers Society of Western Pennsylvania, which will hold its annual banquet at Hotel William Penn, Pittsburgh, on Feb. 24, will be addressed by George P. Torrence, president, Link-Belt Co., Chicago. The presiding officer at the meeting will be I. Lamont Hughes, executive vice-president, Carnegie-Illinois Steel Corp. Mr. Hughes recently was inducted as president of the Society. J. J. Jackson, attorney, Westinghouse Electric & Mfg. Co., will be toastmaster.



THIS WEEK ON THE

General Business Pick-Up To Aid Auto Sales

DETROIT, Feb. 11.

A CHEERFUL note is found in the general steel market in that tonnages are being maintained or are even being increased, despite current curtailment of automotive production. One supplier reported that his mill would be embarrassed on deliveries were certain automotive releases to come through at this time. It is certainly a great comfort to see other users coming into the market, because, whereas the automobile manufacturers have set the pace for the country, they cannot maintain that pace unless the rest of industry can follow and give the needed employment and turnover of goods. Present indicators rather prove that business in general is on the up and up, and that the car makers' temporary difficulties are largely due to the adverse weather that has spread its icy self over the greater part of the country.

For one thing, Detroit is a fairly important domestic refrigerator center. Kelvinator's and Norge's box plants are across the state, but the steel is bought here, where the units are made. These and other plants are getting into full swing, and in fact are clamoring for deliveries on steel. Kelvinator's situation is complicated by the fact that rather complete changeovers in the box welding line have delayed schedules, so that operations are exceedingly active at this time

to meet dealer demand. Briggs plumbing ware division recently went on a 24-hr. shift basis and has also expanded its steel buying accordingly. It is reported in other quarters that boiler plate is being purchased in sizable quantities.

Among the automobile builders, Buick and Packard still head the list, as reported last week. Both have placed large steel orders in the past week. In fact, the Packard 120 has been such a good seller that plans are now afoot to double the present productive capacity of the 120 line for the 1937 model. Another independent manufacturer that has shown considerable gain in sales volume over last year is Graham-Paige. Retail sales in January gained 175 per cent over January, 1935.

Seasonal Low Point Reached

Index of industrial employment in Detroit dipped 6 points at the end of January in keeping with the layoffs that have taken place. It is felt, however, that the low point in production has been reached, and that we will see a climb from this point. Cram's estimate is that 69,876 units were produced in the week ending Feb. 8, as against 85,790 for the week before. Curtailment in Chrysler's schedules had much to do with this drop, and should be counteracted by a corresponding amount as more normal schedules are resumed this week. Chevrolet is expected to produce

about 100,000 cars this month, but the local Gear and Axle plant is operating on a reduced work week owing to stock ahead. Ford Motor Co. has operated on a 5-day week right along, although it is reported that the assembly line is behind the motor line, meaning that motors are being stocked ahead.

Based on reports from strategic centers, Polk's estimate for January passenger car registrations is 190,000 units, compared with 237,194 in December and with 136,635 units registered in January, 1935. The December figure is an all-time record. For the whole year, comparable passenger car registrations were as follows:

	Units
1935.....	2,743,908
1934.....	1,888,557

Cars and trucks registered in the United States were:

1935.....	3,254,591
1934.....	2,292,443

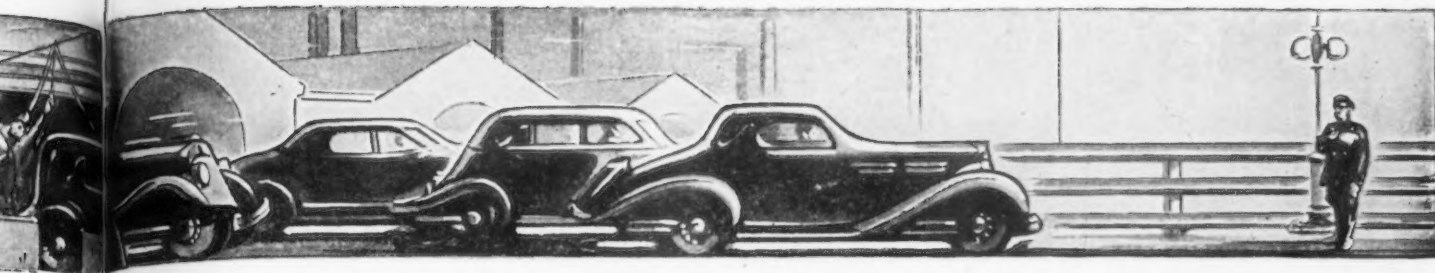
Comparative standing of the first three in registrations of passengers and trucks is as follows:

	1935	1934
Ford	1,012,367	658,778
Chevrolet	823,827	692,413
Plymouth	383,645	302,680

Commercial cars are a very small factor in Plymouth registrations.

Chrysler Bonus

Chrysler's announcement of a \$30 to \$50 bonus to its employees



THE ASSEMBLY LINE

By FRANK J. OLIVER

Detroit Editor, The Iron Age

came at a well-timed moment. Payments to be made on the 14th will fill out otherwise thin pay envelopes due to short hours in the past few weeks. The \$2,300,000 melon also helped head off any insinuations on the part of collective bargainers when the corporation published its annual statement a few days later, indicating net profits of \$34,975,818 in 1935, up from \$9,534,836 in the previous year of so-called profitless prosperity. These are the highest earnings made in any year, bar none, exceeding the 1928 previous Chrysler high by \$4 million.

This latest move makes G. M. and Chrysler one up on Ford, but no one expects the Ford Motor Co. to make an Easter present to its employees. A Ford executive is said to have recently remarked that the company's policy is to pay its workers as it goes along. It would not be surprising, therefore, to see Ford adopt a \$7-a-day minimum wage later this year. This step would not disrupt things in general, since the average pay in Chrysler plants is said to be over 80c. an hour. General Motors pay is commensurate.

Evidence is accumulating of changes ahead for 1937 models. The use of hypoid gears in the rear axle will come into quite general use. In such a spiral bevel pinion mounting, the axis of the pinion is an appreciable distance below the center of the ring gear, and permits a low-slung propeller shaft and the elimination of the objectional tunnel in the tonneau. Gear-cutting machinery has been purchased in recent weeks by both Chrysler and General Motors units. Overdrives should come more into use and automatic transmissions are expected among the volume producers.

In the meantime, there has been a delay in the placement of volume

machinery orders, although several General Motors units placed machinery orders in the past week. Ford machinery releases have been held up temporarily, but are expected to break in a few weeks.

Competition for Markets

Much of the competition today is not so much between makers of the same type of product as between diverse methods of accomplishing the same result. It has already been pointed out in these pages that experiments are being carried on in molded plastics for the body shell, instead of sheet steel. At the same annual meeting of the S.A.E., at which this type of construction was suggested, it was also brought out that Firestone had developed an air cushion spring to replace the steel leaf and coil spring types. Already it has been incorporated in the Stout *Scarab* car. The structure utilizes a dumbbell-shaped rubberized fabric bellows inflated to carry any desired load. The bellows operate in conjunction with an air reservoir by means of a shock absorption valve acting like a pendulum, which restricts the passage to the tank when the car is rounding a bend or when the brakes are applied suddenly. Among the advantages claimed are light weight—2 lb. as against 10 to 55 lb. for steel springs; low frequency of flexure in the comfort range; and wide variations possible in the degree of softness of the ride.

Stainless steel in competition with chromium-plated die castings gives another example of competing materials. In its application to automobiles, stainless steel has had its ups and downs. Ford Motor Co. went in for it in a big way a few years ago, and at that time there was 9 1/3 lb. of the metal in each car. Change in design of the radiators shell dropped this weight to

4 lb. per vehicle, but other applications have been found, so that the unit weight is now 6 lb. In the meantime, other car builders have adopted 18-8 metal, resulting in a steadily increasing quantity of it entering automobile construction each year.

One of the larger manufacturers has predicted the possible use of as much as 40 lb. of stainless per car. If this prediction comes to pass, it will mean the application to other components than body trim or hardware. Some even suggest that engine parts ultimately will be made of stainless, and it is not beyond the realm of possibility to suppose that a light and exceedingly strong engine could be made of welded sheets of this metal. Already, the problem of cylinder wear is being tackled through the use of thin-gage cylinder liners of nitrided steel set in honed bores. The conventional cast iron block will not remain unchallenged forever. The battle between pressed steel and cast iron is becoming hotter every year.

Stamping Art Progresses

Right here in Detroit we have a very strong proponent of the stamping art over the foundry processes. Stamping-conscious Briggs Mfg. Co., as a side line to its body business, has developed a line of pressed steel plumbing ware fixtures that are going across in a big way. Prices are competitive with and in some fixtures even lower than for the corresponding cast iron ware. Bath tubs, kitchen sinks and cabinets are included in the line. At least one supplier of deep-drawing sheets is enjoying a demand that did not exist a year ago.

And speaking of materials, we are reminded that the automobile industry is becoming an increasingly large purchaser of die cast-



We solved their problem. Let us solve yours, too!

This company had a tough turning problem that was causing real trouble. Pratt & Whitney was asked to help, and two P&W men, a tool designer and a metallurgist, studied the job. They recommended a slight change in the material used which improved the product and rendered it more easily machineable. Then they worked out a set of tools for the job with proper rake angles and heat treatment. The result—tripled production and a better job.

Pratt & Whitney engineers are doing this sort of work every day. We see more different machining troubles than the average shop man ever could. We have learned how to lick those troubles, and keep them licked.

We can do the same thing for you, if you'll let us. It costs nothing to talk it over. Why not tell us your troubles and let us do the worrying for you?

PRATT & WHITNEY COMPANY
HARTFORD, CONN., U. S. A.

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ings. It is estimated by reliable authorities that the average total weight of die castings consumed per car in 1935 was 25 lb. This year it will be considerably larger, chiefly due to the use of die-cast radiator grilles, side louvers, moldings and other large parts formerly made of plated stampings. Another case of dog eat dog. In some cars the weight ran as high as 80 lb. Top unit weight is the present Chrysler Airstream grille, which weighs 23 1/4 lb. trimmed. With gates and fins, the rough casting weighs 30 lb. Die blocks for such a casting weigh 8900 lb. for the pair.

Now that the problem of intercrystalline corrosion has been licked, zinc-base die castings exceed all other types in yearly tonnage. Aluminum base castings come next and then copper base (brass). There have been no automotive applications of magnesium-base die castings as yet. The use of zinc of 99.99 plus per cent purity has been the answer to the troublesome growth of zinc-base castings, particularly in humid atmospheres. A recent application of pressure die-cast brass has been for the master cylinder piston of a hydraulic brake system, where its high strength and resistance to shock are advantages.

Although aluminum must bow to zinc on die castings going into automobiles, it does not have to back-track on total tonnages cast. Both the Aluminum Company and the Bohn plants in Detroit have been operating at or near capacity during the past year. Bohn broke all records in 1935 by casting 40,000,000 lb. of aluminum castings. Sales of non-ferrous ingot by its smelting subsidiary increased 70 per cent.

J. & L. Labor Hearing Postponed

THE hearing scheduled at Pittsburgh for Feb. 5 of the complaint lodged with the labor relations board by the Beaver Valley, Pa., lodge of the Amalgamated Association of Iron, Steel and Tin Workers against the Jones & Laughlin Steel Corp., which is charged with discharging members of the lodge for alleged union activities, has been postponed for 30 days. Earl F. Reed, attorney for the corporation, when he first requested the 30-day postponement, was turned down by the board. He subsequently told the board that if the extension were not granted he would try to obtain an injunction restraining the board from reviewing the case.

Free Cutting Aluminum Alloy Is Topic At Screw Products Group Meeting

COMPREHENSIVE data relating to the properties and machining characteristics of the free cutting, strong aluminum alloy screw machine stock recently brought out by the Aluminum Co. of America featured a meeting of the Eastern division of the Screw Machine Products Association, held at the Engineers Club, New York, on the evening of Feb. 7.

Following an interesting introductory address by S. K. Colby, vice-president, Aluminum Co. of America, Pittsburgh, L. W. Kempf and A. Hartwell, of the same company, spoke respectively on "Aluminum Alloys for Screw Machine Products" and "Properties of the New Free Cutting Aluminum Alloy."

"Automatic Screw Machine Practice for the New Free Cutting Alloy" was discussed in a paper by J. F. Coneen, of the Aluminum company's Edgewater, N. J., plant. The machinability of this new alloy, designated as the 11S, was said to be comparable to that of brass. Using high speeds and feeds, good surface and dimensions can be obtained, the chips being well broken similar to brass. The 11S material can be machined using the maximum spindle speed available for all standard types of automatic screw machines, for turning, forming, drilling, cutting-off, etc. It has been machined at about 800 stock surface ft. per min. with no indication that the speed was excessive.

In discussing drilling of shallow depth holes, Mr. Coneen expressed preference for standard twist drills. For deep holes Bakelite or straightway two-flute drills are preferred, he said. In any case, highly polished flutes are desirable—an advantage found in drilling all metals. In explaining the advantage of Bakelite and straightway two-flute drills for deep holes, Mr. Coneen pointed out that the Bakelite drill has a slower twist than the standard, which permits the chips to pass out readily. When used for drilling Bakelite they have a point of about 60 deg.; for aluminum screw machine stock the point should be about 118 deg. The straightway two-flute drills were said to permit chips to clear out of the flutes well; in many cases they produce a smoother finish than twist drills.

Practices relating to circular form, cut-off and box tools and

taps were outlined by Mr. Coneen. For tap sizes up to 5/16 or 3/8-in. diameter two flutes are preferred, he said; for larger taps the number of flutes recommended by tap makers are usually satisfactory. These taps are generally used with cutting rakes or hooks as supplied by tap makers. As for chasers, it was stated that a 10 to 15-deg. rake on the cutting edge produces good results. On all threading tools it is important that the chamfer on the front be equivalent to not less than one thread in order to avoid pushing the material ahead of the tool, causing rough or distorted threads.

Cutting lubricants similar to those used for brass under the same conditions usually have been found satisfactory for machining 11S aluminum screw machine stock. The grade of paraffin oil regularly used for machining brass produces good results. If desirable, a small percentage of lard oil can be added, the best percentage being determined by trial. Tools require an ample supply of lubricant, volume being more desirable than pressure.

A table of tool feeds found satisfactory in the production machining of two different parts was presented by Mr. Coneen in the concluding section of his paper. It was shown that the feeds recommended in the Brown & Sharpe table for free cutting brass could be increased in many cases when machining the 11S aluminum screw machine stock.

Export Executives To Meet in March

THE 1936 meeting of export executives will be held in the Hotel Pennsylvania, New York, March 17. The program has been divided into four sessions: morning, group luncheons, afternoon and banquet. Several well-known speakers will discuss problems of importance to export managers, and a period for round table discussion has been provided. An attendance of from 500 to 600 export managers in all classes of industry and commerce is expected. Oren O. Gallup, Faultless Caster Corp., 2 Lafayette Street, New York, is secretary.

Shall We Quit or Modernize?

(CONCLUDED FROM PAGE 35)

charge direct to an automatic quenching tank and from the quenching tank to a cleansing and tumbling machine. This furnace is controlled within 5 deg. of whatever temperature you set it at. You would have eliminated all the handling between your hardening, quenching and cleaning operations. This outfit alone would have shown you a saving of \$20,000 a year and have given you a uniform product.

How to Make a Profit

"You could have shown another saving by installing tempering equipment that would have given you a more uniform product. The American Electric Furnace put out a model, A-R, that will handle 400 lb. per hour, and this is controlled within 2 deg.

*"The Cameron Can Machinery Co. put out an automatic strip feed press, No. 141. It is a double die press and would give you a production of 24,000 per hour on the filter disks you were making. You were getting about 1500 per hour on each No. 4 open back inclinable press you installed in 1904. Gentlemen, I could go on all day showing you savings you could have made by buying modern equipment. I am going to ask you to consider starting up a new plant. Get some tool and equipment engineers in and check up my statements. I guarantee you will be surprised.

"Don't be a bunch of quitters! The good will of your company is quite an asset and if you don't cash in on it someone else will."

"Well, Tom sold those hard-headed old conservatives the idea of considering his advice and after a week of debating and checking his statements, they voted to start a new plant and with all possible speed.

"They located buildings that were just what they wanted and from then on there was a steady stream of sales engineers and conferences. The superintendent and foremen were sent on flying trips

to get information and details of new methods and equipment.

When the Depression Struck

"In October of 1929 they were in full swing in a modern plant that was the last word in efficiency and economy. Well, you know what happened—about that time the bottom fell out of everything. Those directors certainly did some worrying in 1930, but they got the surprise of their lives.

"The Sales Department seemed to be able to pick up new business and at the end of 1930, they showed a neat profit. The quality of their output and cost of manu-

Five-Day Week Widely Adopted by Industry

THE five-day week has become widely prevalent in American business establishments. It applies somewhat more frequently to factory workers than to clerical employees. This information is brought out in a nation-wide investigation of industrial relations policies made by the National Industrial Conference Board. The survey covered 2452 business establishments in manufacturing, mining, transportation and communication, wholesale and retail trade, finance, and public utilities. Employment represented by these companies amounts to more than 4,500,000.

Wage earners in 1404 companies with 2,767,000 employees are on the five-day week. These companies constitute 57 per cent of the total number covered in the survey. A five-day week for clerical employees is reported by 1110 companies, or 45 per cent of the total.

The conference board's survey indicates that the five-day week has been adopted more generally by large than by small concerns except in the case of the very large companies with 10,000 and more employees. Of the companies employing fewer than 100 persons, 48 per cent have a five-day week for wage earners. The percentage increases as size of establishment

facturing were such that they could meet any competition.

"They went through 1930 to 1935 showing a profit every year. They consider very carefully now any new equipment that is put on the market. They know that to hold their customers they must keep their plant up to the best standards available.

"That is my story, John, and my advice is not to wait too long before you weed out some of the dead wood. Make the necessary changes while you can. Don't wait until you have used up all of your surplus cash and cannot afford the changes you should make now. Have these sales engineers show you where you can make a saving and then don't be afraid to do so.

"A horse and wagon cannot go as far nor travel as fast as an automobile. It is the same in business. You cannot hope to meet competition with equipment and methods that compare with the horse and wagon."

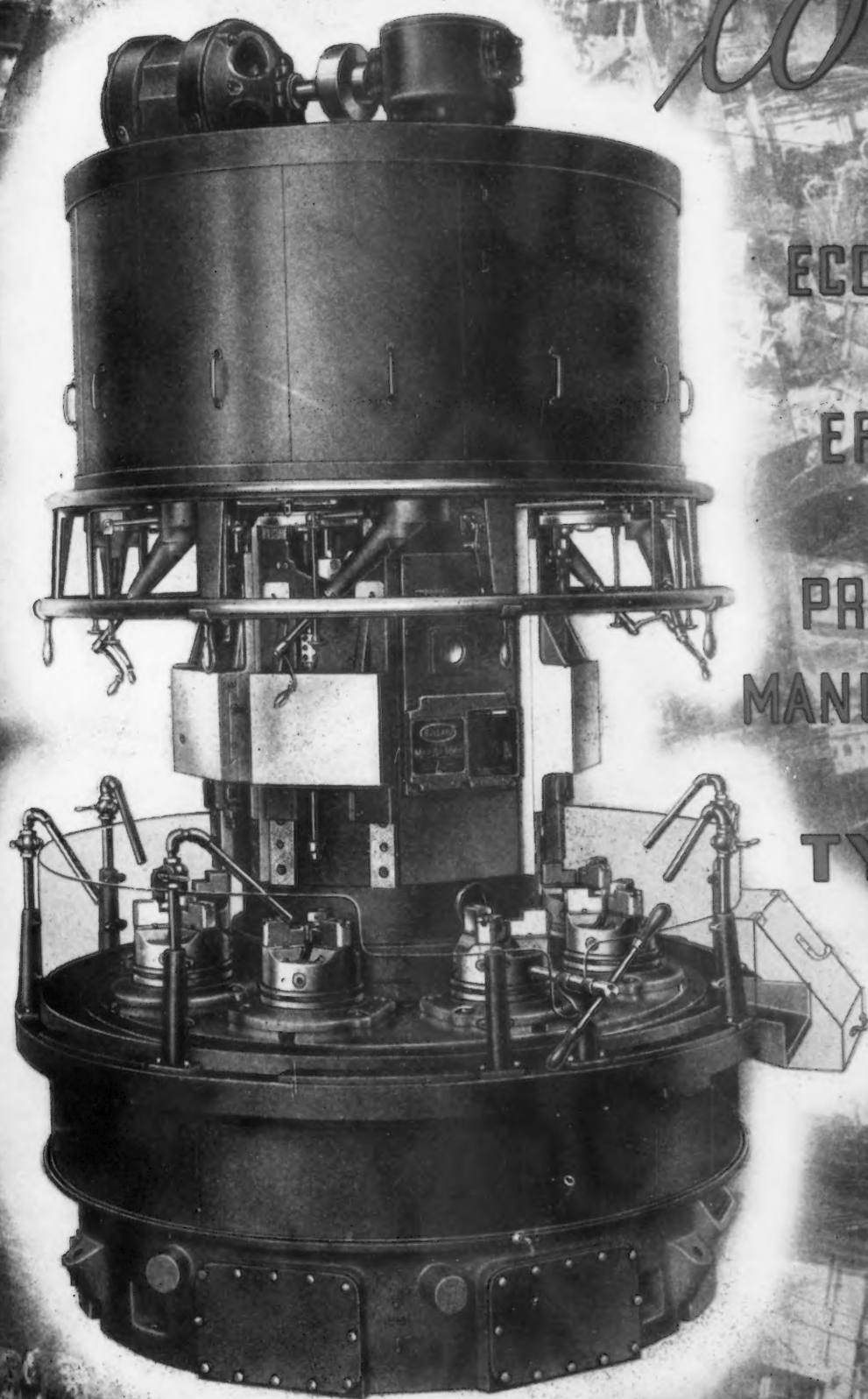
increases and the largest proportion, 71 per cent, is found in companies with 5000 to 9999 employees. The proportion, however, drops to 49 per cent with respect to companies employing more than 10,000 persons.

The same general situation is found in the case of the five-day week for clerical employees. From 32 per cent of companies with fewer than 100 employees, the proportion increases as size of establishment increases, reaching 60 per cent for companies with 5000 to 9999 employees, and declines to 52 per cent for companies employing over 10,000.

Ferrocolumbium for the addition of columbium to 18-8 chromium nickel steel is now being supplied by the Electro Metallurgical Co., New York. Addition of columbium to stainless steel is said practically to eliminate intergranular corrosion even when the metal is exposed simultaneously to high temperatures and corrosive chemicals. Columbium-bearing stainless steel of the proper carbon and columbium contents may be used between 1000 and 1500 deg. F. without developing intergranular corrosion. As columbium does not burn out to a harmful degree during welding, columbium-bearing stainless steel welded with a rod of similar composition may be used without subsequent annealing.

Industries Answer

to



MORE
ECONOMICAL
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EFFICIENT
AND
PROFITABLE
MANUFACTURING

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THE BULLARD COMPANY
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THIS WEEK IN WASHINGTON

Proposed new taxes decimate ranks of the faithful in Congress.

° ° °

William Green places A. F. of L. on record as opposing inflation.

° ° °

Labor board gets busy with complaints against steel companies.

° ° °

° ° °
BY L. W. MOFFETT

*Resident Washington Editor,
The Iron Age*

° ° °

Senate munitions investigating committee fails to make much of a show out of steel executives.

° ° °

Proposal to place all naval building in Government plants meets with mixed reactions.

WASHINGTON, Feb. 11.—Sharp-tongued Representative Knutson, Republican, of Minnesota, recently turned down his Democratic colleagues in the House and branded them as political fleas. . . . He was scolding them because of their truckling meekly to Presidential legislative commands. . . . If this biological rating is justified, he could well have included in the classification of the pestiferous insect many on his own side of the chamber, for, like the avowed New Dealers, a large number of Republicans jumped through the New Deal legislative hoop with the greatest of ease in the days when to do so was much more popular than it is at present. Both parties in both branches of Congress have liberally supported the New Deal program, a fact that New Dealers are smart enough to capitalize. . . . New Deal acts that have been put to death by the Supreme Court axe and others that may be expected to meet the same fate were all blessed with Republican prayer. Among such Republicans who, like their Democratic colleagues, sought to play to political expediency, are

those who now assail the New Deal for its disregard of the Constitution, which only shows what a political huddle really is. . . .

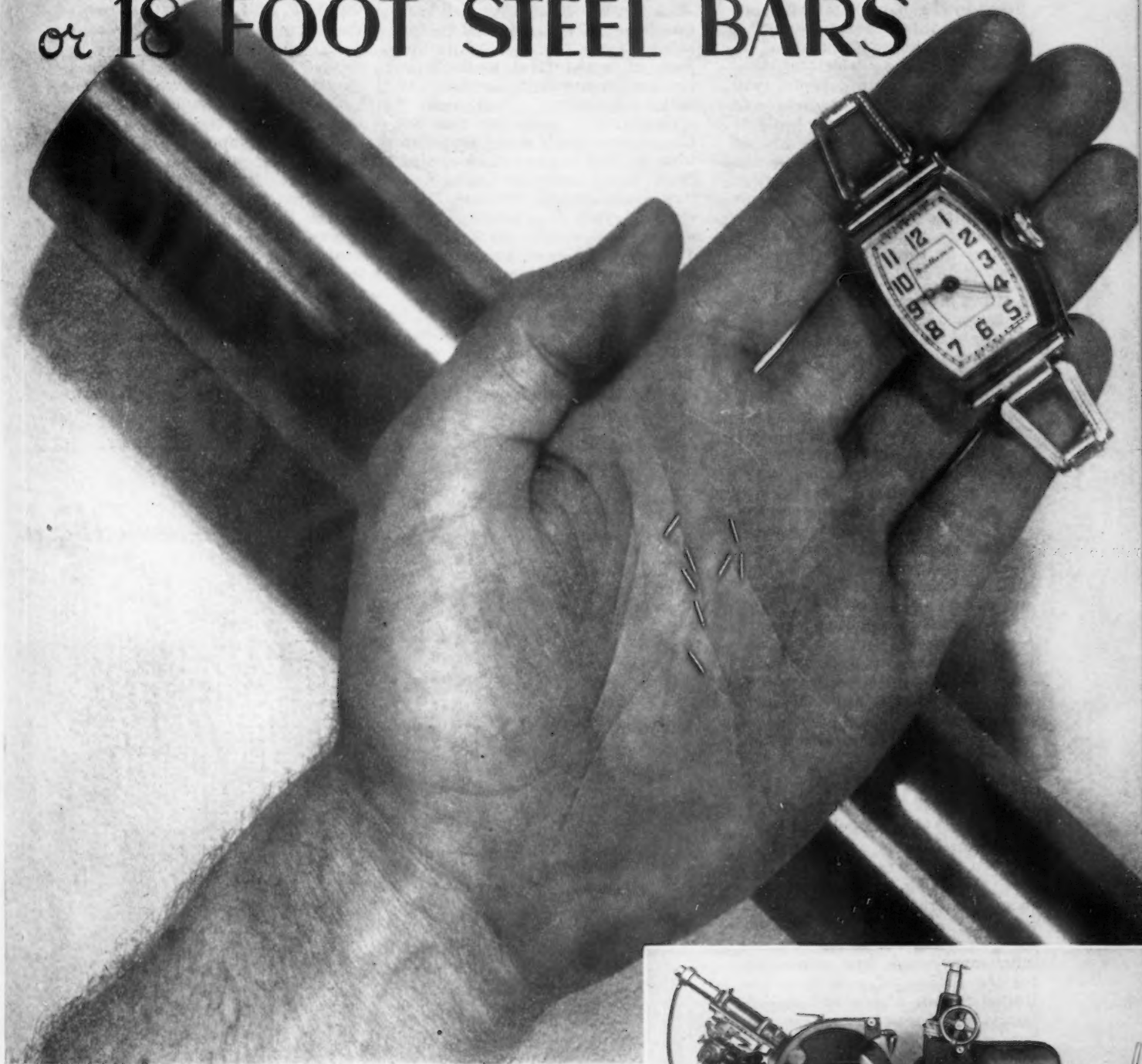
But, like larvae of the flea, politicians have a natural way of undergoing a metamorphosis. Unlike those who really rise to the level of statesmanship and render constructive service, the politicians emerge into a changed, if not a matured form, if by doing so they think it means perpetuation on the Federal payroll. . . .

This is by way of directing attention to the change that has overcome the New Deal loyalists in Congress who hitherto intoned the chant: "Uphold the hand of the President." . . . But when they thought it a better vote catching stunt to strike down his hand, they did not hesitate to do so. . . . Previously successful with strong argument in compelling Congress to sustain his veto by a narrow margin on the soldiers' bonus, the President failed in his second effort

as Congress disregarded his plea and rode rough shod over his protest, thus forcing through a \$2,237,000,000 cash payment bill on the heavily laden American taxpayers under the spur of a powerful lobby. . . .

Then when the President presented the bill which he had warned would have to be paid through taxation, the bonus voters became horror-stricken over a justified fear that public resentment would sweep them out of office in November, and in an attempt to evade the issue inflationist groups propose a wild orgy of printing press money, though seeking to mask the move as a sound one. . . . Meanwhile administration officials are going over plans for additional taxation, and while holding off on bonus taxation at the present session prior to the election, it is recognized as being inevitable. The inflationists, who probably will be voted down, well realize the situation and dread it, but are re-

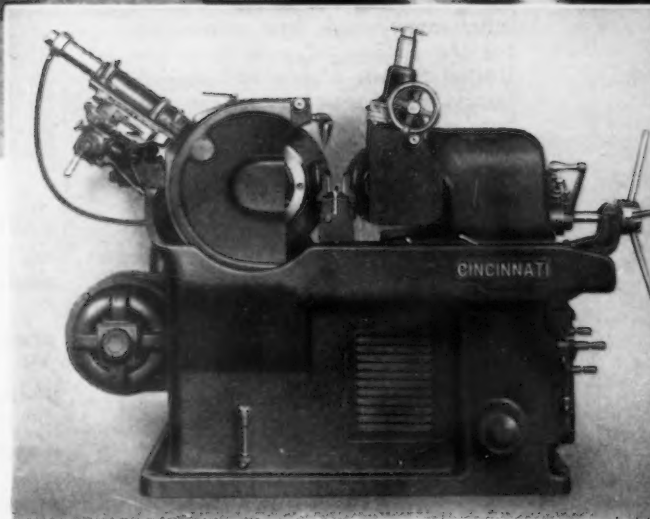
WRIST WATCH BALANCE SHAFTS... or 18 FOOT STEEL BARS



Both the pivot points and the diameter of the balance shaft shown in the illustration are ground at one setting; at a production rate of 1000 per hour.

COMPARE the size of the tiny wrist watch balance shafts with the 2" steel bar. These two extremes give you an idea of the wide range of metallic and non-metallic parts which are ground on the No. 2 Centerless Grinder . . . at high production rates and to the most exact accuracy and finish requirements.

Perhaps many parts in your shop could be more quickly and accurately ground on a Cincinnati Centerless. They may present new opportunities for profitable operations which you have overlooked.



CINCINNATI NO. 2 CENTERLESS GRINDER
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lieved by the plan to stall off bonus taxation until the next session. Tax experts in the administration are considering plans which, if they get onto the statute books, will greatly lower the brackets and raise rates in prevailing brackets so as to encompass millions who do not now pay taxes and hike the rates on those who do pay taxes. Moreover the soak-the-rich idea is out. This group has been soaked to the limit and all the soap box oratory in the world won't beat down that fact. . . .

If not direct taxes, then indirect taxes, such as excise and sales levies are in the cards. . . . The President heretofore has strongly opposed a manufacturers' tax but it remains to be seen whether he will accept that as a means of raising the revenue which is absolutely necessary because of the bonus. . . . If the new farm program is pressed more money will have to be provided through some means and the immediate taxation plan is directed to that program. . . . Senator McNary, Republican, of Oregon, who says the new farm bill is simply a subterfuge to resurrect AAA and is as unconstitutional as the act recently knocked out by the Supreme Court, holds there are only three ways to raise money to continue benefits to farmers: Sales taxes, reenactment of processing taxes as excise levies or a draft on the Treasury. . . .

Inflationists in trying to dodge their responsibility and in an endeavor to save their political skins find themselves not only wedged in between the veterans and the general taxpaying public but also faced with the hostility of organized labor. . . . It was easy to use the dodge that "bankers," not the inflationary move, are responsible for the outflow of gold from the United States, a move which certainly need occasion no concern, but when organized labor lines up against the inflationists the finding of an alibi is not so simple. . . . Having fared so well at the hands of the present Congress and administration, the voice of organized labor has proved its potency, and President William Green of the American Federation of Labor, emerging from a shower of Bronx cheers at the hands of the United Mine Workers, enlisted in the fight against inflation, even more vigorously than have the "bankers." . . .

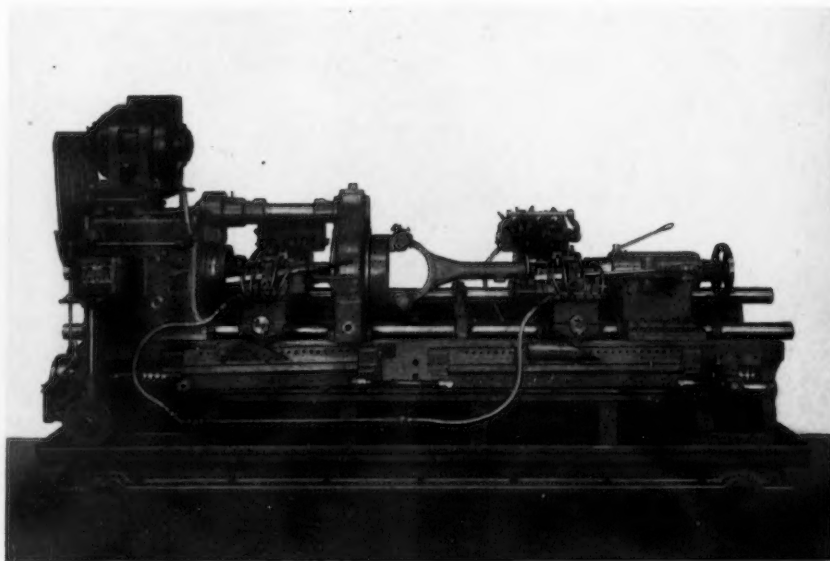
Mr. Green very properly said that "an increase in the price of articles which enter into living costs is bound to follow the inauguration of currency inflation." . . . Precedent without end could be cited to support his contention, and

as a matter of fact so hell-bent are some of the inflationists for raising farm prices that the upping of agricultural products is given as the reason for their inflation campaign. They smugly shut their eyes to the fact that the farmer too would pay more for what he buys and the much reviled "rich" would suffer the least . . . if they would not gain the most. "Obviously," said Mr. Green, "labor will be at a decided disadvantage if commodity prices increase and wages remain stationary at the depressed level to which they have been forced through the pursuit of a wage-inflation policy." . . . Rather skillfully, it seems, Mr. Green used the bogey of inflation for announcing that the executive council of

the A. F. of L. is insisting immediately upon wage increases as a necessary "safeguard," for he pointed out, an increase in wages should precede an increase in commodity prices. Just how far this immediate insistence on wage increases will go and exactly what its implications are was not made clear, but Mr. Green may be assured that it is not only labor, as he uses the term, that would have to pay the piper should the inflationists have their way—happily they likely will not—but it will also be the white collared crew and millions of others. . . .

Fear of inflation is much less justified than is concern over oncoming taxes and the continuous excess of expenditures over income.

The 20" center drive machine—another



The standard Fay Automatic Lathe with standard elements and a minimum of highly specialized equipment makes a most practical special purpose machine. The manager of every plant engaged in moderate-scale or continuous production has to face the conundrum of special versus standard machines. The solution has been found—it lies in the use of the Fay Automatic Lathe.

JONES & LAMSON MACHINE

... Conferences held at the White House with lending agencies and spending agencies apparently are designed as a prelude to New Deal housecleaning sorely called for by the misshapen budget. So many apparent moves toward the "right" have been made only to be followed by increased rather than decreased expenditures that reservations are withheld as to what will be the outcome of those now under way. The decision to cancel more than \$1,000,000,000 in Congressional authorizations to lending agencies made a good headline with a little more thrown in. It means that these lending alphabetical agencies will not borrow these funds either directly or indirectly through the Treasury to the amounts author-

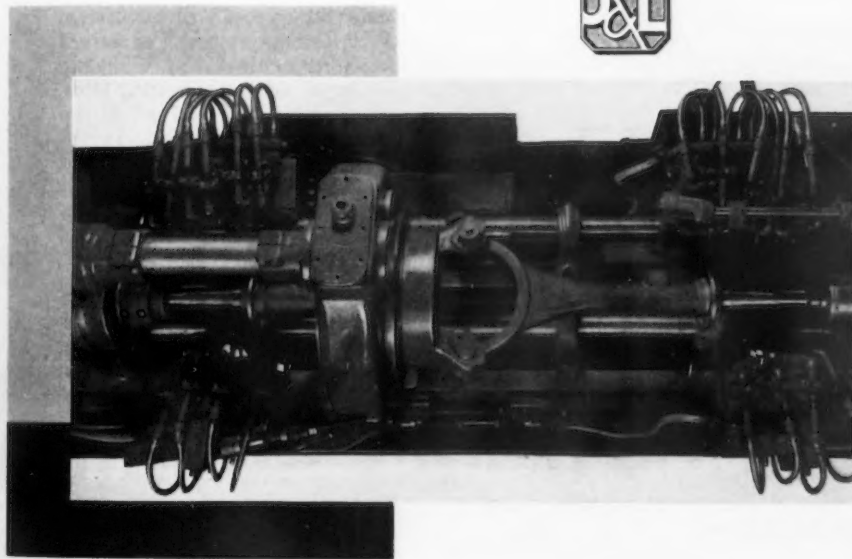
ized. . . . It does not mean one penny of saving since even when asked for, it was not expected that the authorizations would be needed. . . . The President frankly said that the cancellation does not involve any reduction in proposed budgetary outlays. . . . It has no relation whatsoever to the Treasury deficit. . . . It does mean an end to certain kinds of borrowing by such agencies as the RFC, the HOLC and the FCA and withdrawal of contingent liabilities that otherwise might have been incurred. If it reflects further recovery and therefore less need for government borrowing and greater private financing it will be salutary. The fact remains that the move does not bar unlimited bor-

rowing for purposes other than those coming under the affected lending agencies. . . . The President himself discouraged the idea that the cancellation of the authorizations meant tightening of the purse string or a saving. . . . When asked if the action meant the emergency had passed, he replied that he was simply following the usual procedure and that the agencies had reached the point of cancellation of authorizations. . . .

Nor is there any encouraging significance in the action of the President in having Congress repeal the Potato Control, Bankhead Cotton and Kerr-Smith Tobacco Control acts. . . . On the surface it may have looked as though the New Deal, despite its contumely for the horse and buggy, had returned to Old Dobbin and the shay while the Brain Trust was not looking and had forsaken the idea of agricultural regimentation. . . . In reality the President merely had done the sensible thing in asking that Congress wipe these acts off the books, for it was thoroughly realized that these acts were headed for invalidation inasmuch as they were supplementary to the invalidated AAA. . . . By some legal authorities it was even contended that the three supplementary acts were automatically invalidated by the AAA decision, and even if they were not technically killed by that decision they were ready to be knocked down just as soon as they were formally brought before the Supreme Court. . . . The New Deal by having the acts repealed before they were thus brought before the court saved itself the humiliation of seeing more of its legislation tossed into the waste basket of unconstitutionality. . . . It may be too that the New Deal realizes the country has grown weary of the glut of alphabetical agencies and their enormous costs and felt that voluntary decapitation would be a good move politically. . . . Yet on this score there may well be doubt since the new farm program is held by many to be a repetition of the old AAA dolled up in the raiment of improvement of soil fertility, etc., and "voluntary" production control by States rather than the Federal Government with benefit payments, however, channeled to States through the Federal treasury. . . . The pull, no matter what the agency, is always on the Federal treasury. . . . It may be the hand of Congress but it still is the voice of Wallace and therefore many think the substitute is just as unconstitutional as the original AAA. . . .

After damming its parent body, the A. F. of L., the American Liberty League, industrial interests,

milestone on the road of Fay development



The 20' x 76' Fay Automatic Lathe with the center drive attachment, shown on these pages, is an excellent example of the combination of standard elements and specialized equipment. By removing the center drive attachment the machine becomes a standard Fay Automatic Lathe adaptable to any turning work or purpose. Let our engineering department study *your* turning problems.

COMPANY, Springfield, Vermont, U. S. A.

craft unions, etc., etc., the United Mine Workers of America have returned to their homes from their uproarious convention in Washington ready to embark on the campaign for industrial unionization so sturdily promoted against the earnest pleadings of President Green of the A. F. of L. by John L. Lewis, head of the U. M. W., and leading figure on the Committee for Industrial Organization. . . . Mr. Lewis served notice that if there is further "harassment" of the industrial unionists by the craft unionists the U. M. W. will not hesitate to secede from the A. F. of L. . . . Whether or not Mr. Lewis is playing a good political game may be a question as to which there is a division of opinion. . . . Certain it is that many think he is and that he set the stage smoothly by talking to President Roosevelt at the White House before the convention opened. . . . Then departing entirely from traditional organized labor tactics he swung into politics when he had the convention endorse the President for reelection, at the same time opening the Mine Workers' purse to aid the President in his campaign. . . .

The strategy set in motion reports of divers nature as to political ambitions of organized labor leaders, some of whom clearly have in mind the building up of a Labor party. . . . It is the belief that they visualize industrial unionism as the nucleus for such a party within the next few years. . . . One report was that Mr. Lewis could if he wished be chosen this year to run as Vice President on the New Deal ticket, though it is realized that labor will not attempt such a political tie-up at this time. . . . Moreover, well satisfied with Mr. Roosevelt's endorsement of organized labor's program, it is held that it has no reason for projecting its own political candidates at this stage. . . .

It can be said for Mr. Lewis and other officials of the United Mine Workers that they did a most unusual thing when they mustered the hardihood to refuse increases in salaries. . . . The convention, in the face of some violent protests, and by use of a rigid gag rule, voted them handsome boosts. . . . Mr. Lewis' stipend was increased from \$12,000 to \$25,000. . . . This was on the next to last day of the meeting and in the closing hours of the convention, Mr. Lewis announced that he and the other officers would not accept the boost. A rare thing, indeed. . . . Congress might well follow the example, or, better yet, vote to reduce salaries of its members, a very few of whom earn even a small portion

of their \$10,000 annual income. . . . But there is not the remotest chance that they will do such a revolutionary thing. . . . On the contrary 13 Senators and more than 100 Representatives voted themselves more than \$100,000 when they voted for the bonus. . . . Yet they squawk if a Supreme Court justice sits on a case involving some interest in which the justice may have had any sort of connection in the dim past.



Coal Commission Considers Price Stabilization

One of the most important hearings in the program of price stabilization was begun on Monday before the National Bituminous Coal Commission to hear recommendations on proposed minimum prices from district boards in price area No. 1, which includes large bituminous fields in the eastern part of the United States. The commission has announced that considerable groundwork in preparation for price stabilization has been completed.

Meanwhile, the commission has upheld the right of Ray Edmunston, representing the United Mine Workers, as labor member of the Illinois District Board. Protest against the seating of Edmunston was filed with the commission by the Progressive Miners of America. The commission took testimony at a hearing from representatives of both unions. In its decision it held that the United Mine Workers represent the greater number of coal mine employees in Illinois.



Steel Rates to Be Readjusted

The Interstate Commerce Commission last Thursday announced that, effective May 29, authority had been granted to railroads to establish and maintain rates on iron and steel products in carloads within Illinois and adjacent territory without observing the long-and-short-haul provision of the Interstate Commerce act. The act prohibits charging a lower rate for a long haul than for a shorter haul on the same route. This provision, on conditions, was suspended upon request of the carriers in order that they might meet truck and barge competition.

The readjusted rates will be established between points in Illinois territory, including portions of Wisconsin, Missouri, Indiana and Kentucky, and will be the lowest prescribed on the basis of what is

known as the Jones & Laughlin Steel Corp'n. scale from the Pittsburgh district to St. Louis and points in Illinois and Indiana. They are not to exceed rates constructed on the basis prescribed in the so-called general iron and steel rate increase case which established a scale May 20, 1930. Higher rates may be maintained from or to intermediate points provided they do not exceed rates prescribed in the general iron and steel scale.

The seven principal origin groups in which the bulk of the traffic originates are Milwaukee; Chicago, DeKalb, Sterling and Peoria, Ill.; St. Louis, and the so-called Tri-Cities group, comprising Davenport, Iowa; Rock Island, Ill., and Moline, Ill.



NLRB Issues Complaint Against Wheeling Steel Corp'n.

Alleging that it had "discriminatorily discharged" William Patton and "fostered and dominated general and department councils, organization councils of the production employees," the National Labor Relations Board has issued a complaint against the Wheeling Steel Corp'n. of Portsmouth, Ohio. A hearing will be held at Portsmouth Thursday, Feb. 13, in the High School auditorium. Charges were brought against the company by three lodges of the Amalgamated Association of Iron, Steel and Tin Workers.

Hearing on an NLRB complaint brought against the Jones & Laughlin Steel Corp'n., involving its Aliquippa, Pa., plant, has been postponed to March 2. It will be held at Pittsburgh.



Metals Division Issues Publication on Construction

Under the direction of the Metals and Minerals Division, Bureau of Foreign and Domestic Commerce, the first number of *Construction Abroad* has just been issued. In a foreword, the division points out that the service is design for the information of construction firms, manufacturers and exporters of building materials, specialties and equipment with respect to construction activity and progress abroad and to set forth opportunities for the sale of their services and products. R. L. Harding is chief of the division. The material in the circular is prepared by Assistant Chief J. Joseph W. Palmer.

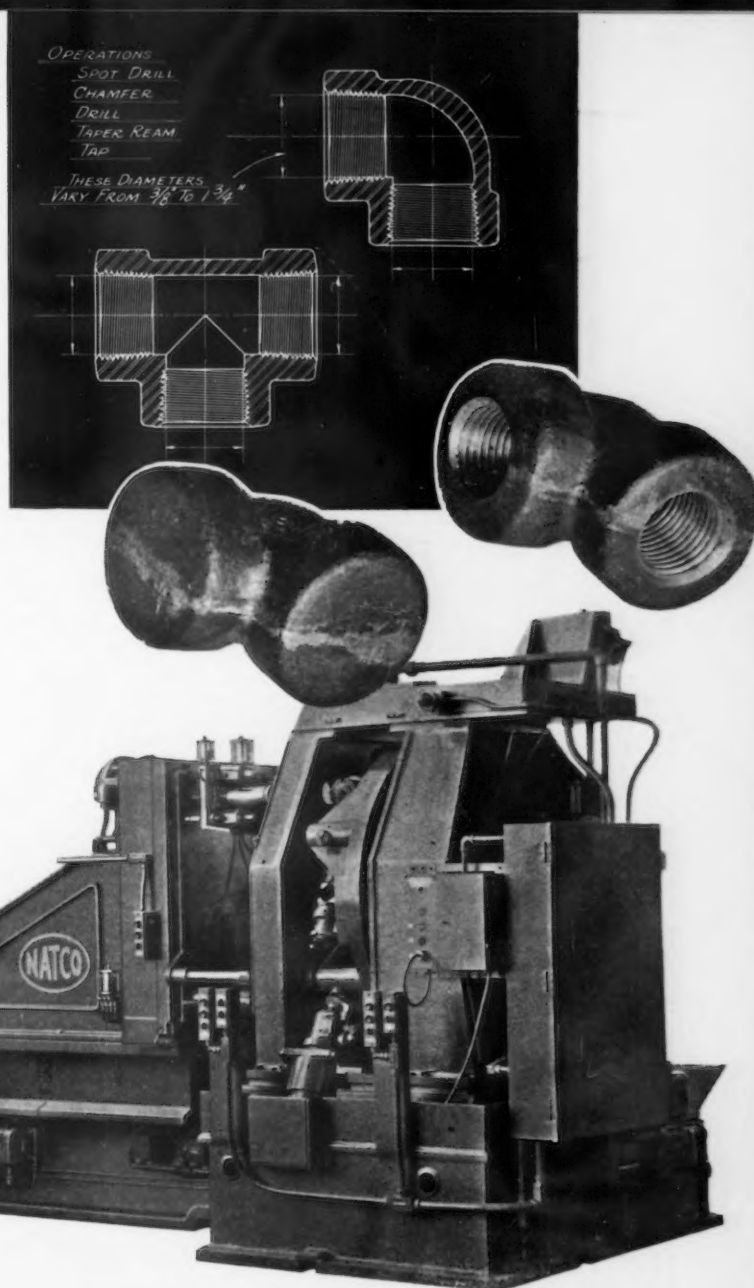
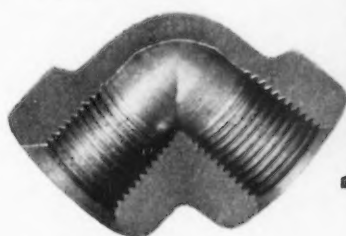
46

Pipe Elbows Per Hour

● The NATCO one-way combination driller and tapper shown is performing all the drilling, chamfering, reaming and tapping operations on high pressure forged steel pipe elbows and tees. One size of the elbows is shown. Production varies from 23 to 46 parts per hour.

● In the past these forgings have been finished in an entirely different method—but this manufacturer took advantage of the possibilities of NATCO equipment and combined the operations. Not only were the costs reduced, but a much better finished and stronger forging was had than was being produced by the old method.

● This is another example of NATCO engineering—another example of a difficult job being done better and faster with modern NATCO equipment.



Combine Drilling, Reaming, and Tapping and Reduce Your Production Costs

● Combining various kinds of operations leads to greater accuracy in addition to lower costs. NATCO Engineers will be glad to study your Drilling, Boring and Tapping problems. They will make a careful survey and lay their recommendations before you without any sort of an obligation on your part. Then you be the judge as to whether or not the savings

will warrant the purchase of the recommended equipment. Send in your prints or better still—call a NATCO representative today.

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FUEL PUMP ROTORS ON No. 10 GRINDER

These nitralloy rotors (upper right in small photograph) are 1 3/8" diameter, and about 50 are chucked at once.

The rotary chuck of the Blanchard carries the work pieces continuously under the wheel. Uniform flatness and accuracy are assured. Production is high yet because of the high work speed and ample water supply there is no heating of the work.



BLANKING DIE ON No. 10 GRINDER

The weight and rigidity of Blanchard Grinders allow the economical use of soft, free cutting, wheels. The high work speed and ample supply of coolant prevent any heating. Dies and punches are quickly and safely ground in a few minutes time.



REAMER BLADES ON No. 10 GRINDER

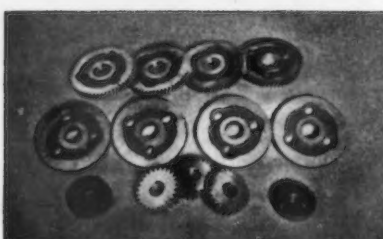
A maker of adjustable reamers uses the Blanchard to grind both sides and the beveled ends of the blades, the latter operation requiring an angle fixture.

The Blanchard One Piece Steel Magnetic Chuck holds these small pieces securely for grinding to close limits. The face of the chuck is of steel and brass which wear well and do not charge with grit.



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Blanchard Grinding of gear blanks ensures parallel sides. These blanks of 3140 steel, the largest 6" diameter, are ground on both sides from the rough forging. The hole is then bored, blanks are stacked on arbor, turned on O. D. and cut.

Production figures on work shown here sent on request, or send samples or blueprints of your own work for conservative time estimates.

The Blanchard Machine Co.
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"investigate the activities" of manufacturers and distributors "of arms, munitions or implements of war." The hearing of steel executives was supposed to be confined to profits on armor plate, projectiles and forgings. These products in the estimation of the committee apparently constitute what are known as munitions so far as the steel industry is concerned. Necessarily because of the small demand for these products there are a limited number of manufacturers and the steel executives heard represented three companies, the Carnegie-Illinois Steel Corp., the Bethlehem Steel Co., and the Midvale Co., the only makers of armor plate, demand for which obviously is small. Despite this fact, however, efforts have been made to surround the production of these lines with the idea of "monopolistic" control.

Manganese Ore Discussed

The real highlight of the hearing, however, centered about testimony on the manganese ore situation. It was a repetition of the old differences between the steel industry and producers of domestic manganese ore. J. Carson Adkerson, president of the Manganese Ore Producers' Association, made an appeal before the committee for restoration of the 1c. per pound duty on manganese ore. This duty by reason of a reciprocal tariff agreement has been reduced to 1/2c. per pound. He emphasized the need of manganese ore supplies as essential to war-time emergencies. To this end he again called for quick development of the domestic mines. Occasion was taken to assail steel makers for refusing to purchase domestic manganese ore. He said it could be supplied on a quality and price basis equal to that of foreign ores but that steel manufacturers would not purchase it. He said that foreign ore is selling at \$34 per ton, duty paid, laid down at Pittsburgh.

Bethlehem Objects!

His testimony was sharply combated by W. H. Johnstone, assistant secretary of the Bethlehem Steel Co. Not only did Mr. Johnstone point out the inferior quality of domestic ores as compared with foreign ores, but he presented figures on manganese ore contracts covering the past five years showing that the Bethlehem Co. had paid between \$22 and \$23 per ton, duty paid, laid down at Johnstown, Pa., for foreign ores. He also explained that manganese ore is bought on the unit basis—that is, according to its manganese con-

Senate Munitions' Committee Gets Nowhere Investigating Steel Executives

WASHINGTON, Feb. 11.—The Senate Munitions' Committee examination of steel executives last Friday proved a tame affair. Those who expected it would subject them to severe "grilling" in an effort to bring out sensational testimony as to huge profits from war were disappointed. Actually, the committee gave the impression that it, like the country as a whole, had grown tired of its 18 months' investigation and was anxious to bring it

to a close. Yielding virtually no new testimony, its hearings have finally been ended. They were resumed last week only after the Senate had reluctantly voted it a small additional sum with the understanding they were to be finished in 10 days and a report made in March.

Hearing of steel executives lasted only one day and developed nothing new. Headed by Senator Nye, progressive Republican, of North Dakota, the committee was set up to

tent, and not by the ton. Members of the committee indicated that Mr. Johnstone's testimony had given them an understanding of the reason why foreign ore rather than domestic ore is used by the steel industry.

Testimony was given both by Mr. Johnstone and F. A. Schick, the latter vice president and comptroller of the Bethlehem Steel Co., that the company's armor plant was valued at \$8,193,000. Reflecting the enormous overhead and depreciation of such plants, it was stated that it had operated at only one-seventh of capacity from 1921 to 1927, the period of the so-called naval holiday, while from 1927 to 1934, Mr. Schick said, it operated at about 25 per cent of capacity. Profits on small lots of armor plate for the American navy were said to have ranged from 2 to 21 per cent, generally from 6 to 8 per cent.

Armor Plate Profits

When Alf Wemple, committee investigator, submitted data on costs and profits of three armor contracts as being typical of those made by the Carnegie Steel Co. and the Navy Department, William Donald, company auditor and assistant secretary, denied that they were typical of company business, a denial that should have been unnecessary in view of narrow profits of the industry, to say nothing of the fact that until recently a large section of the industry, including the larger units, has been running in red. Manifestly any attempt to compare returns from armor sales, reflecting such an insignificant tonnage as related to commercial transactions, is absurd. Also they did not reflect the tremendous overhead and depreciation. Mr. Wemple referred to armor contracts, which he said brought profits ranging from 42.7 to 57 per cent.

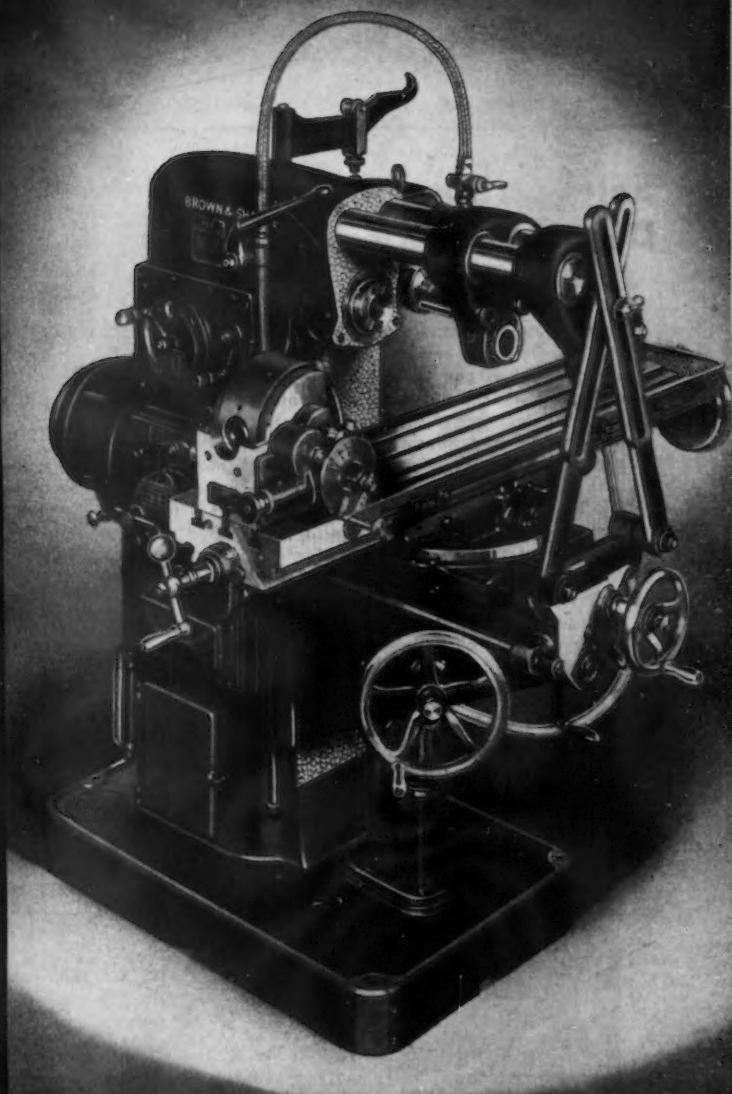
The committee was told by H. L. Frevert, president, Midvale Co., that the company's armor plate plant was valued at \$6,236,000 and had operated at only 13 to 20 per cent of capacity since the World War.

Evidence also was given to show that domestic makers export only minor quantities of forgings and armor plate.

Cost of Plant Replacement

Based on an estimate prepared for the committee, figures were submitted calculated to show that an armor plant like the Bethlehem plant could be reproduced by the Government for \$7,193,439. Regardless of the accuracy of the figures,

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however, the estimate has not been taken seriously. That is, if it was intended to indicate that the Government proposes to build a Government armor plant. Under the spurring of former Secretary of the Navy Josephus Daniels, the Government was prompted to build such a plant. It now stands at Charlestown, W. Va., a white elephant, which has never produced armor plate, was erected at a high cost, and is a continuous source of heavy overhead and depreciation charges when based on private commercial accounting.

Designed to support further the advocacy of Senator Nye of Government production of ships, mu-

nitions, etc., the committee received a report from C. H. Spencer, head valuation engineer of the Interstate Commerce Commission, who said an initial plant outlay of \$41,000,000 would make it possible for the government to take over production of all its battleships and munitions. The report estimated that \$23,604,860 would be required to recondition navy yards so that the Government could build all of its own vessels. However, the hypothetical fleet construction program, Mr. Spencer said, was adopted solely as a basis for estimates, is "unofficial" and "in no way subscribed to by the Navy Department."

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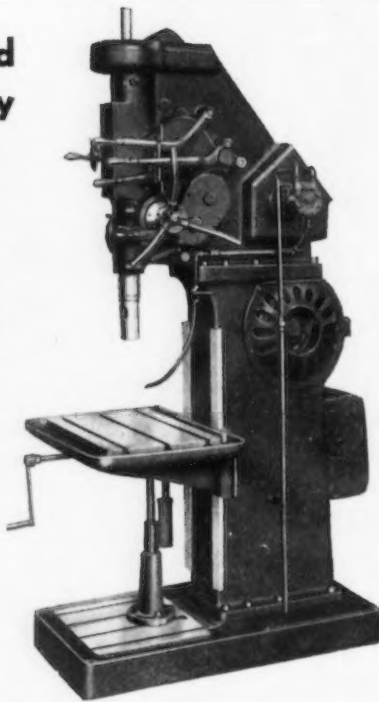
Self-Oiling, All-Geared High Production Units provide maximum output on certain drilling, tapping, reaming, and similar operations. There still remains, in many shops, a vast amount of such work that can be handled most economically on standard Self-Oiling, All-Geared Drilling Machines built in several types and sizes, for medium and heavy work. These machines have the accuracy, power, and rigidity necessary for getting out a lot of work. Their many operating conveniences, which include quick-change speeds and feeds, speed up production, cut costs. A variety of attachments, and Auxiliary Machine Tool Heads, are available for making additional savings in many instances. See features, advantages, and specifications in our Drilling Machine Catalog which will be sent promptly on request.

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OBITUARY

EDWARD JOHN SCHNEIDER, bridge and structural contracting manager for Columbia Steel Co., a subsidiary of United States Steel Corp., died of heart disease, Jan. 25, in Berkeley, Cal. Graduated from the University of Illinois in 1900, he became associated with the Chicago & Western Indiana Railroad Co. and later with Paxton & Vierling Iron Works. From 1901, when he went with Koken Iron Works, until his passing he was continuously with the United States Steel Corp. In May, 1907, he moved to San Francisco to become contracting manager, first for the American Bridge Co.; then for the United States Steel Products Co., and finally, with the Columbia Steel Co.; in full charge of engineering, contracting and erection in the Pacific Coast territory. The Carquinez Straits bridge, the Southern Pacific bridge at Suisun, Cal., and the San Francisco-Oakland bridge were under his charge. He was past-president of the Engineers' Club of San Francisco, and past-president of the local section of the American Society of Civil Engineers. He was 60 years old.

♦ ♦ ♦

P. HUNTER, purchasing agent for the Chicago, Burlington & Quincy Railroad, died Feb. 3. He was born at Charleston, S. C., in

1874, and was educated in law at the Chicago College of Law. After several years of practice in his profession, he entered the stores department of the Burlington. In 1903 he was transferred to the purchasing department and in 1918 he was made assistant purchasing agent. He was made purchasing agent in 1931.

♦ ♦ ♦

HERBERT F. PERKINS, former president of the International Harvester Co., died Feb. 1 at Ojai, Cal. He was born in Constantinople, Turkey, where his father



E. J. SCHNEIDER

was a professor at Robert College. Mr. Perkins was graduated from Yale and in 1899 he became associated with the Malleable Casting Co, Chicago. His next position was with the McCormick Harvester Co., which later became the International Harvester Co., of which he was made president in 1929. Mr. Perkins retired from active duty in 1931.

♦ ♦ ♦

JOHN M. ADAMS, general superintendent, Wyckoff Drawn Steel Co., Ambridge, Pa., died after a short illness at his home in Pittsburgh on Feb. 3. He had been connected with the company for about 11 years.

♦ ♦ ♦

OTTO G. SCHULTZ, former treasurer of the Schultz Bridge & Iron Co., McKees Rocks, Pa., which later was merged with American Bridge Co., died at his home in Morristown, on Jan. 31. He was 78 years old.

♦ ♦ ♦

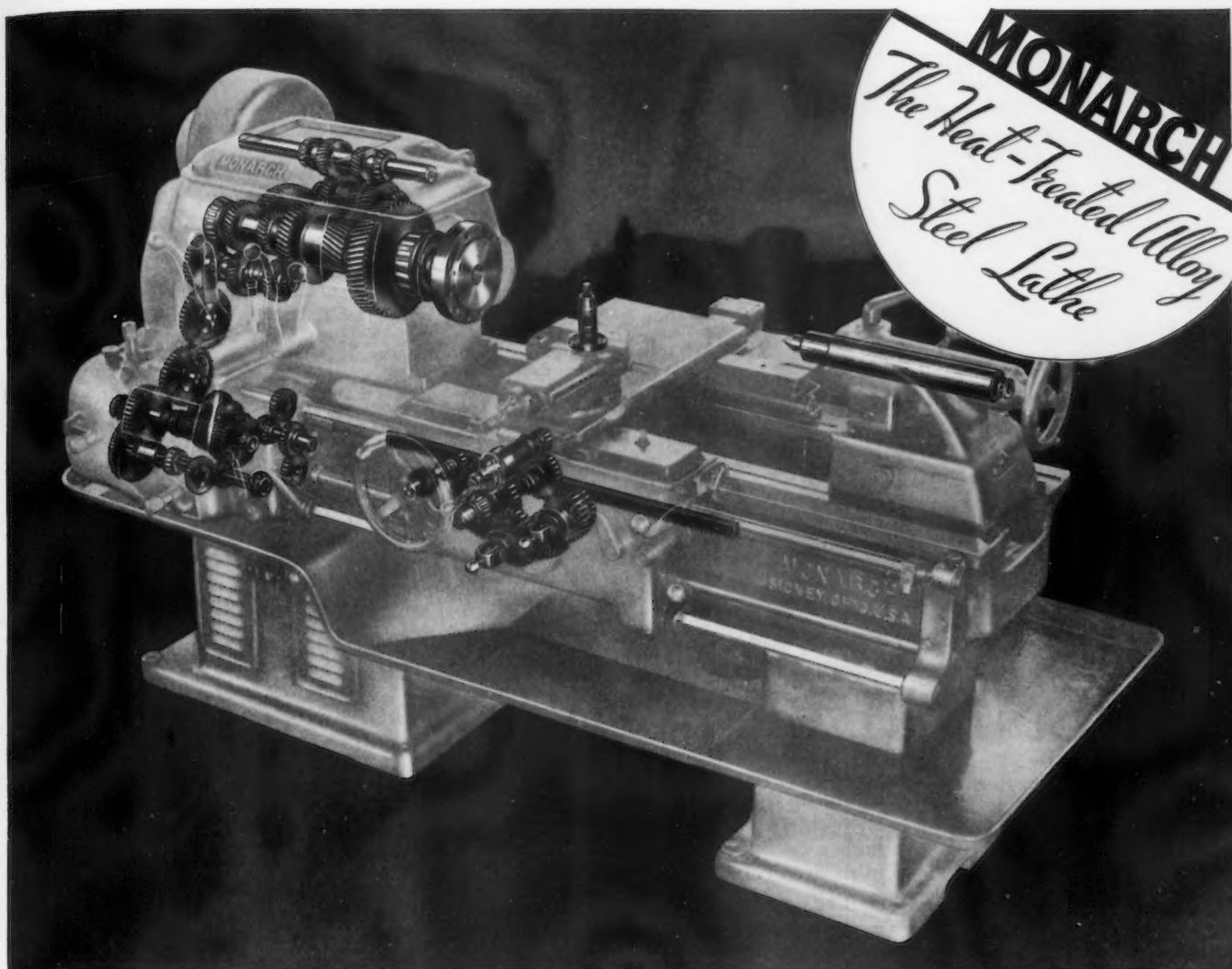
FREDERICK A. LANGE, who rose from molder's apprentice to the presidency of two of the largest foundries in Milwaukee, died on Feb. 3 in a hospital at New Orleans, La., at the age of 72 years. He had lived in Pensacola, Fla., since his retirement in 1924. Mr. Lange was born in Germany, coming to America as a boy. After learning the molders' trade he was employed by large Milwaukee casting shops until 1893 when in association with the late Charles Maynard he founded the Crucible Steel Casting Co. He became sole owner in 1903. Three years later, in 1906, he established the South Side Malleable Casting Co., which has been idle since a devastating fire in 1930. Since his retirement, active management of his properties has been in charge of three sons, namely, Albert C., Walter W., and Frederick A., Jr. Mr. Lange was among the first to recognize and utilize the electric furnace for melting steel.

♦ ♦ ♦

JOHN HENLEY, vice-president of the Chicago Extruded Metals Co., died on Jan. 30 in his office of a heart attack. Until he, in association with Kenosha, Wis., capital, organized the extruded metals concern, Mr. Henley was for many years an executive of the Kenosha division of the American Brass Co. He was 58 years of age.

♦ ♦ ♦

OSCAR W. MUELLER, former president of the Mueller Machine Tool Co., Cincinnati, and pioneer



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If your lathe equipment is not up to the Monarch standard . . . the modern standard . . . you are paying for Monarchs, without securing the benefits of their operation. Any lathe that will not produce the quantity, the quality, and the variety of work, at the low man-hour cost, that Monarch offers you . . . cannot make as much money for you.

Monarch lathes have more new features and many more positive advantages. A point for point comparison will emphasize these facts. And what are some of the features that account for Monarch lathes often heading the replacement list? Advantages like these: Helical gears, anti-friction bearings and many heat-treated steel parts (that result in their being known as "All Heat Treated Steel" Lathes). In addition, the high operating efficiency engineered into their design, insures maximum production, long-lived accuracy as well as more dependable and economical service.

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Let Monarch engineers sit down with you and cooperate in the solution of your turning problems. You may find their recommendations interesting.

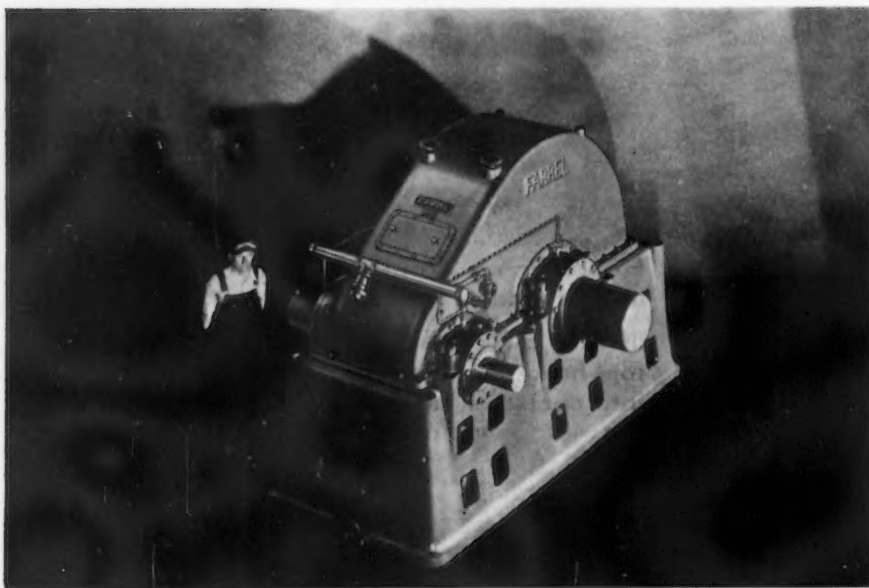
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FARREL ROLLING MILL EQUIPMENT also includes: Rolling Mills—Chilled Iron and Special Alloy Iron or Steel Rolls—Universal Mill Spindles—Rod Mill Tables and Manipulating Equipment—Rod Coilers—Lead Presses for Pipe or Rod—Roll Grinding Machines—Roll Calipers—Gears—Mill Pinions—Drives up to 10,000 H.P.

Farrel Heavy Duty Mill Drives are designed by engineers with a thorough understanding of the conditions imposed by the higher speeds and heavier loads encountered in modern rolling mill operation.

The drives are scientifically proportioned, with large factors of safety, and are built of carefully selected materials, designed to provide great strength and rigidity. The continuous tooth herringbone gears are accurately generated by the Sykes process and mounted on roller bearings. (Sleeve bearings optional.) Special attention is given to provide thorough lubrication.

Mechanical efficiency is high . . . vibration is absent . . . smooth, quiet, trouble-free operation and long life are assured.

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tool manufacturer, died at his home in Cincinnati on Jan 31, aged 73 years. He had been identified with the machine tool industry for 47 years.



JAMES W. MCCLURE, assistant to the auditor, Carnegie-Illinois Steel Corp., Pittsburgh, died at his home in Beaver, Pa., on Feb. 6, after a short illness. A native of Canada, he started with the Carnegie Steel Co., Ohio works, Youngstown, Ohio, in July, 1907,

serving in various positions until January, 1922, when he became secretary to I. Lamont Hughes, who was then general superintendent of the Youngstown works. He came to Pittsburgh as Mr. Hughes' secretary when Mr. Hughes was made vice-president of the Carnegie Steel Co. in 1925. When Mr. Hughes became vice-president of the United States Steel Corp. at New York in June, 1928, Mr. McClure accompanied him. He returned to Pittsburgh as a special

engineer in February, 1930, when Mr. Hughes became president of the Carnegie company. Mr. McClure was appointed chief of the cost department of that company in September, 1932, and assistant to the auditor of the Carnegie-Illinois organization in December, 1935.



CLIVE BELDON VINCENT, chairman of the board of the Topping Co. since 1925, died on Feb. 4, after a long illness. He was 72 years old.



FREDERICK W. CONANT, treasurer of the tap and die firm of Conant & Donelson Co., Conway, Mass., formed in 1904, died on Feb. 5, aged 69 years. His firm originally was located in Greenfield, Mass.



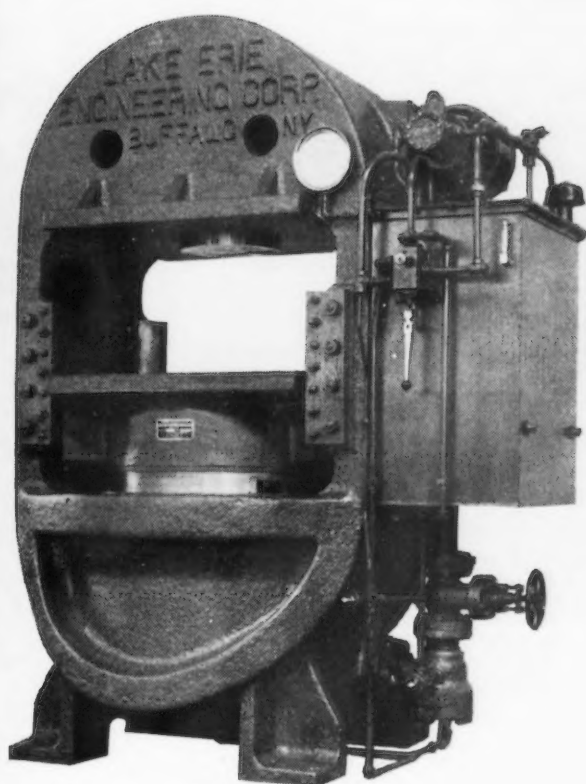
JOSEPH W. MARSH, vice-chairman of the board, General Cable Corp., and a director of Westinghouse Electric & Mfg. Co., died at his home at Pittsburgh on Jan. 31, aged 78 years. In 1909 he helped to reorganize the Westinghouse company. For the greater part of his business career he was identified with the cable industry.

Custom House Guide For 1936 Is Issued

ABOUT 60,000 changes have been made in the 1936 edition of the *Custom House Guide*, thus making it in effect practically a new tariff edition, according to the publisher, John F. Budd, 122 East Forty-second Street, New York.

One-third of the imports and one-quarter of the exports of the United States are affected by the nine reciprocal trade agreements entered into between the United States and Cuba, Brazil, Belgium, Haiti, Sweden, Colombia, Canada, Honduras and the Netherlands, for which the rates of duty on over 482 commodities have been included in this new edition. The new rate of duty appears opposite each article affected in the alphabetical import commodity schedule of 30,000 commodities.

The February issue of the *American Import and Export Bulletin*, monthly supplement to the annual Guide, contains the complete text of the Swiss Reciprocal Trade Agreement. The bulletin is favored by those in foreign trade since it enables them to be fully advised as to the many new laws and regulations, reciprocal trade agreements and keeps the information in the guide revised and up-to-date.



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SOLID HOUSING type having cylinder, top head and tension members combined into one steel casting. No tension rods or nuts. Hardened and ground steel wearing plates 8" thick by 18" diameter. Four adjustable gibs for guides.

SELF CONTAINED pump with high speed advance of ram under low pressure. No intensifier used. Single lever control, with automatic high pressure.

EXTREME RIGIDITY combined with rapid traverse makes this press a production unit for other work besides die sinking.

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British Steel Production Soars While Pig Iron Shortage Continues

LONDON, Feb. 10 (By Cable).—Pig iron sales are still small owing to the shortage of supplies. The relighting of several furnaces before the end of March

has been announced. East Coast hematite prices for delivery to Middlesbrough, Northeast Coast and Scotland have been raised to a uniform price of 77 shillings per

ton. West Coast hematite is to be advanced this week.

Steel output is reaching record proportions but production of semi-finished steel is still behind demand, necessitating large imports. Rail mills are less busy owing to a drop in export orders. There is a large volume of miscellaneous orders of structural steel and increasing specifications from shipyards.

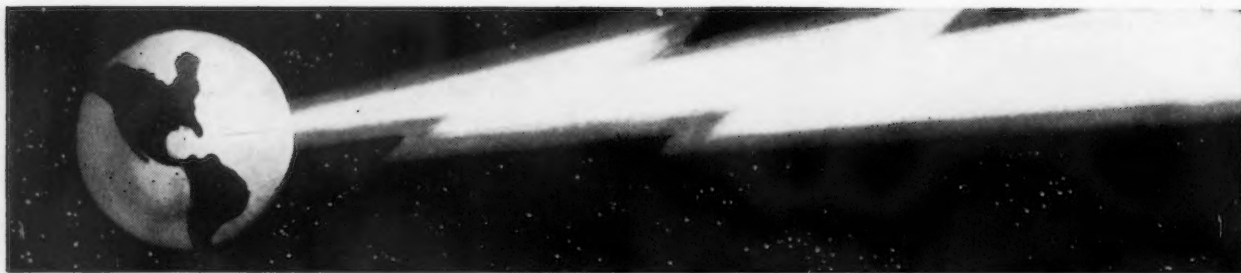
Tin plate's home business is quieter. There are some small export orders for second quarter shipment. Home and export deliveries are satisfactory.

Continental iron and steel are rather quiet excepting semi-finished steel and plates.

A five year agreement has been signed between the South African steel makers, British Iron and Steel Federation and the International Steel Cartel, whereby South Africa's requirements are assured to local producers to the extent they can supply. The importation balance will be controlled by British Federation and Cartel and will be regulated to insure the most suitable source of supply. Prices will be stabilized at economic level.

British Prices, f.o.b. United Kingdom Ports	
Per Gross Ton	
Ferromanganese, export	£9
Billets, open-hearth	£5 10s. to £5 15s.
Tin plate, per base box.....	18s. 9d. to 19s. 3½d.
Steel bars, open-hearth	£7 17½s.
Beams, open-hearth	£7 12½s.
Channels, open-hearth	£7 17½s.
Angles, open-hearth	£7 12½s.
Black sheets, No. 24 gage.....	£9 15s.
Galvanized sheets, No. 24 gage....	£11 15s.

Official Continental Prices, f.o.b. Continental Ports	
Per Metric Ton, Gold £	
Current dollar equivalent is ascertained by multiplying gold pound price by 124.14 to obtain franc equivalent and then converting at present rate of dollar-franc exchange.	
Billets, Thomas. £2 7s.	
Wire rods, No. 5 B.W.G.	£4 10s.
Steel bars, merchant	£3 5s.
Sheet bars.....	£2 8s.
Plate, ¼ in. and up	£4 6s. 6d.
Plate, 3/16 in. and 5 mm....	£4 8s. 8d.
Sheets, ½ in....	£4 9s. 8d.
Beams, Thomas. £3 2s. 6d.	
Angles (Basic) ..	£3 2s. 6d.
Hoops and strip base	£4 2s. 6d.
Wire, plain, No. 8	£5 7s. 6d.
Wire nails.....	£5 15s.
Wire, barbed, 4 pt. No. 10 B.W.G.	£8 15s.



NEWS OF THE WEEK

California Steel Industry Considers Steel In Residential Construction — Assails Administration

DEL MONTE, Cal., Feb. 8. —Vigorously assailing the Administration's bureaucratic and overspending activities, James A. Emery, of the National Association of Manufacturers, declared that "never before has business been so continuously threatened with the shackles of arbitrary regulation, the impairment of the guarantee of constitutional freedom or the back-breaking burdens of excessive public expenditures and taxation as at present." Addressing the twelfth annual conference of the Iron, Steel and Allied Industries of the California State Chamber of Commerce, he warned against the growing movement to regimentalize industry by Federal licensing and the threat of compulsion to conform to any command from Washington to avoid penalizing and discriminating taxation.

Launching into an extemporaneous attack on the theory of social insurance he pointed out that proposed plans would not increase producing capacity but would result only in an impossible tax burden on the income group in favor of the aged.

Walter A. Tower, executive secretary of the American Iron and Steel Institute, declared that during 1936 the steel industry would spend approximately \$200,000,000 for modernized equipment and for new finishing capacity, a gain of nearly 43 per cent over 1935. "Today," he stated, "employment in the steel industry has reached a figure approximating the total number of employees in the years of peak activity."

C. B. Tibbetts, a member of the California Unemployment Reserves Commission, called the convention's attention to the many flaws in the present unemployment legislation and urged careful scrutiny by industry.

Problems affecting the various phases of the industry were carefully discussed at closed group meetings which were held for merchant steel dealers, reinforcing steel distributors, structural shops, and purchasing agents. A paper on machines and methods prepared by A. C. Danekind, chairman, manufacturing practice and equipment committee of the General Electric Co., is treated elsewhere in the issue.

Steel in Residences Discussed

An entire afternoon session was given over to the discussion of the utilization of steel in homes. Different phases of the subject were presented by: J. D. Fenstermacher, Columbia Steel Co.; H. J. Bennett, Columbia Steel Co.; E. L. Soule, Soule Steel Co.; C. M. Gunn, Gunn, Carle & Co.; E. F. Watkins, Southern California Edison Co. The conference heartily agreed with Mr. Watkins' suggestion that a coordinated program of the entire industry designed to promote the public acceptance and demand for steel frames as a basic material in residence construction, and not the individual promotion of any one manufacturer's idea, will remove all cause for the hesitancy on the part of any unit in the industry to participate in the program. A resolution embracing the suggestion was adopted and a coordinating committee was ap-

pointed to develop a plan of procedure to secure the active participation of the entire steel industry in an educational program.

The conference went on record urging Federal officials to assist in ending strife in the shipping industry on the Pacific Coast; also, to show every economy in the spending of Federal funds and to eliminate present wasteful and inefficient methods and practices.

Upon the recommendation of the nominating committee present officers were reelected. They are as follows: Chairman, W. W. Glosser, Hubbard & Co.; vice-chairman, E. H. McGinnis, Union Hardware & Metal Co.; secretary, Charles S. Knight, California State Chamber of Commerce.

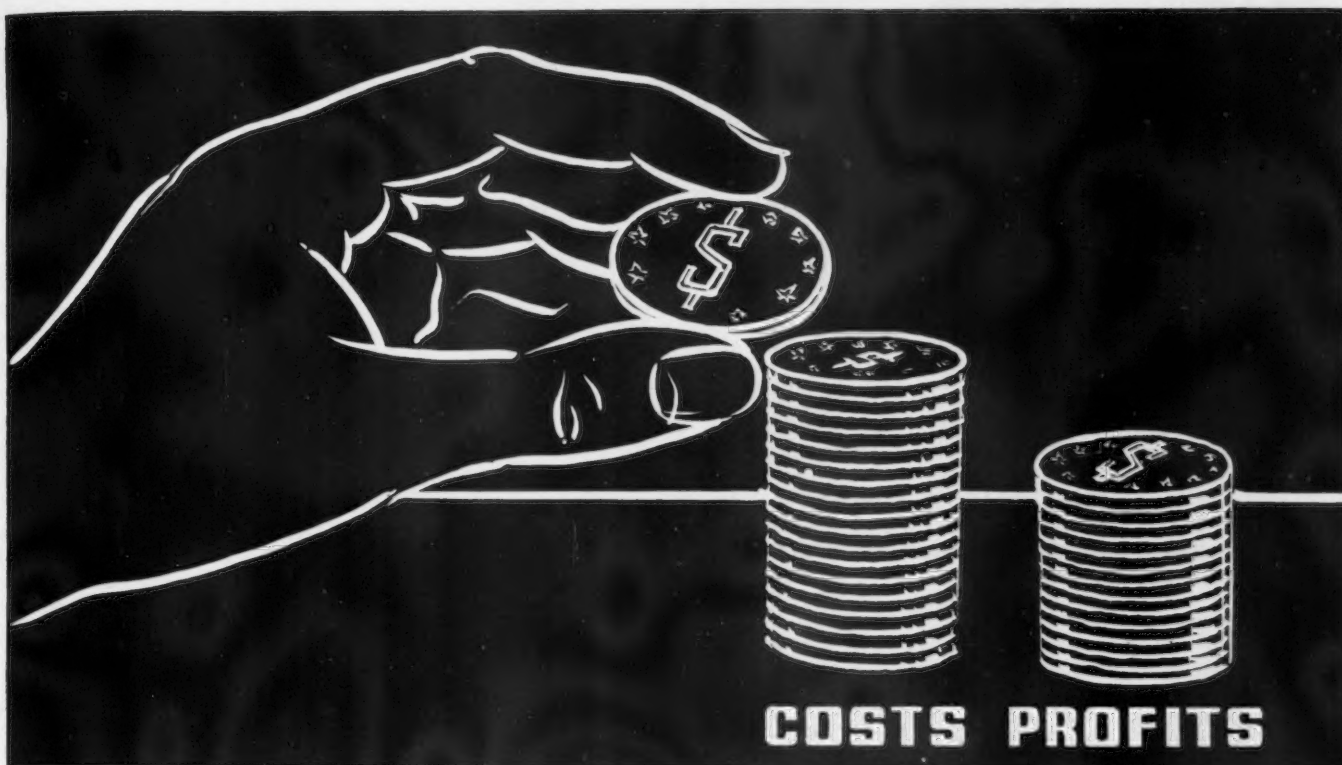
Factors Influencing Recovery in Steel

"The question of recovery in the steel industry," according to Mr. Tower, "involves consideration of several aspects of industrial activity, including employment, wages, production, prices, profits and general policy. Recovery in some one of those aspects may appear relatively more important than in others, but balanced recovery in the industry would seem to embrace all of them.

"Probably all will agree," Mr. Tower continued, "that there has been some measure of revival in most lines of business, at least from the extreme low levels of 1932 and 1933. Whether the recovery so far accomplished has been balanced, either in the steel industry itself or among industries generally, may still be a debatable question. But what has been done by the steel industry, and what if anything remains to be done to complete recovery, is most readily judged by looking to see what the facts reveal.

"The record of employment over the last few years indicates that the steel industry has completely

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If your manufacturing includes drilling, boring, tapping, or keyseating operations, it will be to your advantage to let us figure on your costs. Modern Baker machines handle work accurately and *faster*. The savings in part costs justify the investment with even a moderate volume.

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discharged its direct responsibility for recovery in that respect. When the depression in the steel industry was at its maximum in 1932, the number of employees on the payrolls was estimated at approximately 240,000. In recent months, the number on the payrolls has been running in excess of 430,000, a figure which approximates the total number of employees in the years of peak activity in 1928 and 1929. And under these circumstances it is doubtful whether the steel industry, with its rolls nearly full, can rightly be expected to absorb any appreciable number of workers from the general ranks of unemployed. It seems clear that in its responsibility for giving employment to workers normally attached to it, the industry has made a genuine contribution to recovery.

"A similar conclusion appears to be justified from the record of the industry in respect to wages. I refer to wage rates rather than to weekly earnings or aggregate amounts of payrolls in the industry. Wage rates which are reflected in average earnings per hour are matters which members of the industry generally can determine for themselves. The amount of money in the weekly pay envelope, however, is in part a reflection of the volume of work which is available for the men employed, and that factor brings into play circumstances which lie outside the influence of the steel industry itself.

"At the bottom of the depression, wage rates in some parts of the industry had been reduced to the

lowest levels which had been experienced for many years. For the past two years, however, the average hourly wage rates in the steel industry, as a result of voluntary increases made early in 1934, have been 35 per cent above the 1933 level—or approximately as high as have ever obtained in the past in peace time. Wage rates in the steel industry now stand in their customary position above the average level of wages in other industries."

Sheet Metal Shops Outlet for Stainless

D. C. O'BRIEN, of the development department of the American Rolling Mill Co., Middletown, Ohio, recently told a group of Kansas City distributors that in his opinion sheet metal shops were rapidly becoming one of the most important outlets for stainless steels.

Adaptability of the metal to many new uses and the constant introduction of new products made of stainless steel are responsible, according to Mr. O'Brien, for the increasing importance of the sheet metal shop in this comparatively new field.

Although early developments in the manufacture of stainless steels date back about 30 years, phenomenal strides have been made in the last few years, particularly from the standpoint of fabrication and adaptation to new fields. For instance, chemists and technicians

have determined what grades are most satisfactory for welding, and the type of welding most suitable for specific purposes. At the same time they have learned that the application of stainless steels has certain limitations.

These sheet metal shops which grasp every opportunity to work with stainless steels will be the ones to realize profits in the future, Mr. O'Brien told his audience. Demand for stainless steels for many purposes has been increasing steadily in the last few years, he said. He also emphasized that the shop with the experience and reputation for forming and welding stainless steels will have a big jump on competitors in the next few years.

Sheet & Tube Has Large Gain in Profits

YOUNGSTOWN SHEET & TUBE CO., Youngstown, had profit of \$1,597,521 during 1935 after all charges, including interest, depletion and depreciation. This, as shown by the company's preliminary annual report, compares with a loss of \$2,665,119 in 1934.

Gross income after deducting charges for repairs, maintenance of plants and provision for Federal income taxes, was \$13,563,994. Deducting miscellaneous charges, income before interest, depletion and depreciation last year was \$11,694,045. This compares with income from operations of \$7,339,048 in 1934 before depletion, depreciation and interest charges. In 1935, there was deducted \$5,683,843 for depletion and depreciation.

The company had cash and investments in United States and other securities on Dec. 31 amounting to \$8,080,129 and a ratio of current assets to current liabilities of 6.09 to 1. Preferred dividends amounting to \$206,250 were paid Jan. 1, leaving total preferred dividends in arrears Dec. 31 of \$2,887,500.

Crucible's Net Profit Rises to \$1,268,176

CRUCIBLE STEEL CO. OF AMERICA, and subsidiaries, completed 1935 with net profit of \$1,268,176, compared with \$75,157 for 1934. On June 30, 1935, the company reported net profit for the first half year of \$456,820. The profit for the last six months was \$811,355.

H. S. Wilkinson, chairman, said

in the annual pamphlet report that the rate of company operations at the end of the year, if continued, would indicate a profit of approximately \$2,500,000 annually. The total increase in surplus for the year was \$1,910,501, from which \$375,000 was paid in accumulated dividends on the preferred stock. In addition to its dividend payments, the company reduced its bonded indebtedness by \$2,750,000 during the year.

The company's production and sales during the first six months of 1935 was 59 per cent of its capacity, while, for the last six months, it was 63 per cent. The year's average of 61 per cent contrasts with 52 per cent for 1934. The gradual increase in per cent of capacity operations over the last four years can be seen in the following comparisons:

1932	23.42 per cent
1933	37.49 per cent
1934	52.85 per cent
1935	61.63 per cent

Mr. Wilkinson pointed out that the material increase in operations during the second half-year was principally due to the heavier volume of business received from machine tool and small tool manufacturers, users of tool and special steels, the motor industry, the oil industry, the agricultural implement industry, and the railroads.

Colorado Fuel Has Profit of \$275,523

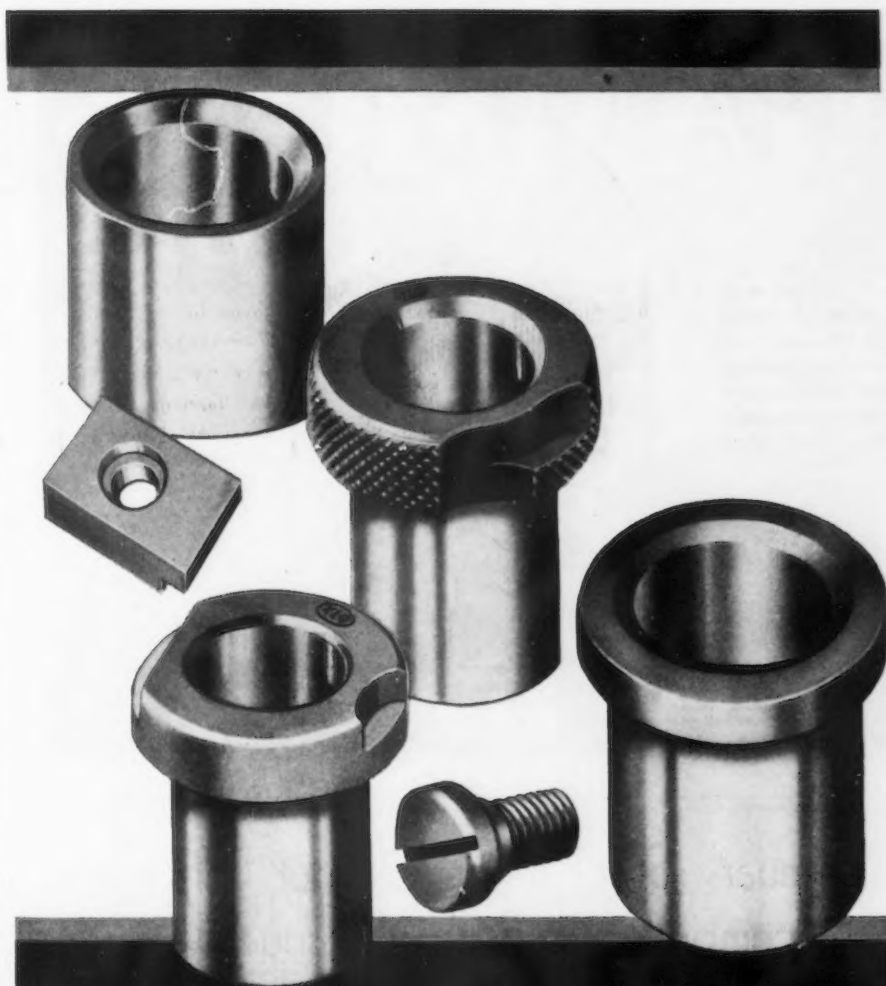
COLORADO FUEL & IRON CO. and subsidiaries had a profit for the year ended Dec. 31, 1935, of \$275,523 after expenses, taxes, depreciation, and other charges. Subsidiary companies did not enter receivership, and, excepting the Colorado Industrial Co., are not in bankruptcy.

The above figure compares with a 1934 loss of \$241,539 after deduction of like charges.

American Steel Foundries, Chicago, had net profit in 1935 of \$115,692, compared with a profit of \$245,365 in 1934. The company declared an accumulation dividend of 50c. a share on the 7 per cent preferred stock, payable March 31.

Sivyer Steel Casting Co., Milwaukee, had 1935 income of \$36,906, compared with \$5,521 in 1934. The latter figure does not make provision for \$3,234 for unemployment benefits under Wisconsin laws.

New Jersey Zinc Co. for year ended Dec. 31, 1935, had net income of \$4,660,000, compared with \$3,788,380 in 1934. Taxes, depreciation, depletion, contingencies, etc., were deducted. For the December quarter of 1935, the company's net profit was \$1,323,784, against \$1,168,003 in the preceding quarter.



EX-CELL-O DRILL JIG BUSHINGS

Furnished in a wide range of sizes, both clamp and screw types. 250,000 bushings carried in stock! Complete stocks in both New York and Detroit. Data sheet and price list upon request.

EX-CELL-O

AIRCRAFT
& TOOL

CORPORATION

DETROIT.
MICHIGAN



January of 1935, 2,871,531 tons was produced. Daily production last month equaled 112,942 tons, compared with 123,272 tons in December and 106,353 tons a year ago. Operations last month were at the rate of 51.18 per cent of capacity, against 55.68 per cent in December and 48.04 per cent during January a year ago.

New Resistor Type Rocking Furnace

THE Detroit Electric Furnace, Detroit, announces preliminary tests and the manufacture of a resistor type rocking furnace.

The unit is interesting in low temperature melting operations and may have special value in the chemical field. The broad principles of the furnace are old, the rocking mechanism and control being similar to that of the company's previous models. To the "Detroit" rocking furnace mechanism a resistor element has been adapted by mounting a graphite resistor on the central axis of the furnace and connecting it to a special transformer. It is expected that unusual temperature flexibility and control will be derived by this means.

January Steel Ingot Output Beneath December, but Above January 1935

PRODUCTION of Bessemer and open-hearth steel ingots in January declined to 3,049,439 gross

tons from 3,081,807 tons in December, according to the American Iron and Steel Institute. During

REPORTED BY COMPANIES WHICH IN 1934 MADE 97.91 PER CENT OF THE OPEN-HEARTH AND 100 PER CENT OF THE BESSEMER

INGOT PRODUCTION

	Reported Production (Gross Tons)		Calculated Monthly Production— All Companies		Number of Work- ing Days	Per Cent of Opera- tion
	Open- Hearth	Bessemer	Monthly	Daily		
1934						
January	1,786,468*	172,489	1,997,129†	73,968†	27	33.59†
February	1,993,465*	176,873	2,211,944†	92,164†	24	41.86†
March	2,540,243*	208,904	2,798,440†	108,646†	27	47.07†
April	2,622,531*	257,482	2,936,064†	117,443†	25	53.34†
May	3,003,676*	331,620	3,399,494†	125,907†	27	57.18†
June	2,718,782*	282,592	3,059,483†	117,672†	26	53.44†
July	1,340,924*	119,869	1,489,453†	59,578†	25	27.06†
August	1,245,139*	109,598	1,381,350†	51,161†	27	23.24†
September	1,127,269*	117,615*	1,268,977†	50,759†	25	23.06†
October	1,325,777*	127,789	1,481,902†	54,885†	27	24.93†
November	1,447,626*	132,059	1,610,625†	61,947†	26	28.13†
December	1,794,437*	131,467*	1,964,257†	78,570†	25	35.68†
Total	22,946,327*	2,162,357*	25,599,118†	82,312†	311	37.38†
1935						
January	2,576,671	239,858	2,871,531*	106,353*	27	48.04*
February	2,500,062	224,336	2,777,765*	115,740*	24	52.28*
March	2,582,211	230,810	2,868,141*	110,313*	26	49.83*
April	2,358,249	231,916	2,640,504*	101,558*	26	45.87*
May	2,331,297	254,796	2,635,857*	97,624*	27	44.10*
June	1,978,180	210,487	2,230,893	89,236	25	40.31
July	2,003,011	224,456	2,270,224	87,316	26	39.44
August	2,629,828	233,361	2,919,326	108,123	27	48.84
September	2,541,840	233,737	2,829,835	112,193	25	51.13
October	2,315,624*	270,719	3,146,446*	116,535*	27	52.64*
November	2,840,451	252,163	3,153,247	121,279	26	54.78
December	2,793,746	228,425	3,081,807	123,272	25	55.68
Total	29,951,170	2,835,064	33,425,576	107,478	311	48.55
1936						
January	2,793,421	196,389	3,049,439	112,942	27	51.18

*Revised.
†Adjusted.

Johns Hopkins to Offer Lecture Course

THE Johns Hopkins University School of Engineering, Baltimore, is offering a course of lectures on the practical phases of engineering problems. The lectures will discuss daily working methods of design, construction, and operation, and the special properties of materials involved therein.

The course will comprise seven lectures, by members of the staff of *Mechanical Engineering*, on the properties of important metals and alloys as used in the technical industries. They will develop the fundamental theory of alloys and the application of this theory to the preparation, selection and usage of metals for industrial purposes, with particular reference to recent developments.

The lectures are open to the public and are intended for engineers, plant managers, foremen, and mechanics. They will be given on Wednesday evenings, beginning Feb. 26, at 8 p. m., in room 110, Maryland Hall, Homewood.

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United Now Operating Plant at Wooster, Ohio

THE United Engineering & Foundry Co. has acquired possession of the Wooster, Ohio, plant of Mackintosh-Hemphill Co. The purchase, which had the approval of Federal Court at Pittsburgh since Mackintosh-Hemphill is undergoing reorganization, was completed last week. The purchase included, in addition to the Wooster plant, all drawings and patterns of the Mackintosh-Hemphill Co. used in the manufacture of rolling mill equipment.

The Wooster plant covers 11 acres with machine shop, forge shop and fitting and erection floor. The heavy machinery section is entirely modernized. Single pieces up to 150 tons can be handled and the largest rolling mill machinery assembled. Among the equipment which United Engineering will build in the future will be replacement parts for Mackintosh-Hemphill mills and the universal mills, three-high balanced sheet mills and precision thrust bearings for rod and merchant bar mills formerly furnished by Mackintosh-Hemphill Co.

H. Kuthe, who has been superintendent at Wooster, will continue in that position for United Engineering.

Cleveland Welding Firms Consolidated

CONTRACT WELDERS, INC., 4829 Lexington Avenue, Cleveland, has acquired Industrial Welding & Cutting Co., 4400 Perkins Avenue, Cleveland. The two plants will be operated as divisions of Contract Welders, Inc., until April 1, when equipment and organization will be consolidated as Contract Welders, Inc., in large quarters at 2545 East Seventy-ninth Street, Cleveland.

The Homestead, Pa., steel works of the Carnegie-Illinois Steel Corp. established a new all-time safety record in January, when only three employees were injured severely enough to lose time from their regular duties. This record was achieved by a force of 7519 men working a total of 1,093,982 hours. The best previous record for one month was four accidents in June, 1935, with a similar force working only 847,623 hours.

In low-priced, dry-cutting General Purpose Hack Saws, too

MARVEL LEADERSHIP is not confined to the revolutionary newer developments in sawing machines, the giant MARVEL Hydraulic, Heavy-Duty High Speed, and Automatic Production Sawing Machines that have claimed so much attention recently.

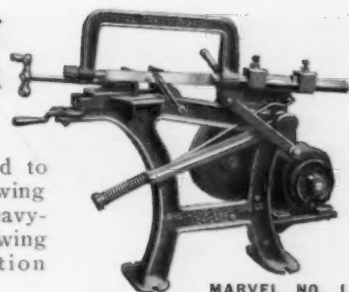
80% ARE MARVELS. Among the smaller hack saws MARVEL also dominates the field. Of the low-priced, general purpose, dry-cutting hack saws, 80% in use today are MARVELS. They are standard in most shops because of their extremely heavy and rigid construction, their convenience, accuracy, dependability and long life. They are, strictly speaking, "more saw for the money", come in models that exactly meet all ordinary requirements.



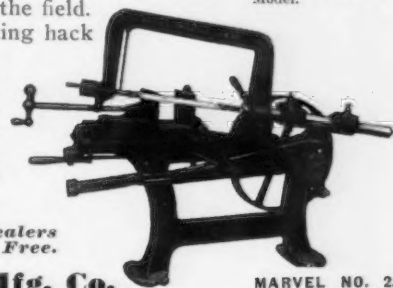
Stocked by Leading Dealers everywhere ... Catalog Free.

Armstrong-Blum Mfg. Co.
"The Hack Saw People"

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MARVEL NO. 1.
Capacity, 4" x 4".
Belt or Motor Drive
and Portable
Model.



MARVEL NO. 2.
Capacity, 8" x 8".
Belt or Motor
Drive; also port-
able models on
truck.

Steel Corporation Shipments in January Heaviest Since June, 1934

JANUARY shipments of finished steel products by the United States Steel Corp. totaled 721,414 tons, and were the heaviest for any month since June, 1934. Not since 1931 has there been a better January in this respect. The latest figure compares with 661,515 tons for December and 534,055 tons for January a year ago.

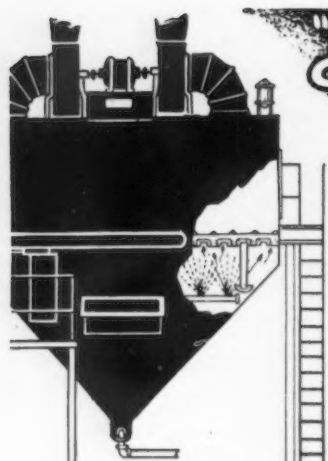
The tonnage was sufficient to engage the corporation's finished steel-making facilities at 43.7 per

cent of capacity, against a rate of 42.7 per cent in December and 31.9 per cent in January, 1935.

South American railroads have ordered 30 Diesel-electric cars from a Birmingham, England, firm. These cars are insulated against noise, while a pressure ventilating and heating system keeps the air in the car fresh, free from dust, and at a constant temperature.

MONTHLY SHIPMENTS OF STEEL PRODUCTS BY UNITED STATES STEEL CORPN.

Month	1933		1934		1935		1936	
	Ship-ments	Per Cent of Ca-pacity	Ship-ments	Per Cent of Ca-pacity	Ship-ments	Per Cent of Ca-pacity	Ship-ments	Per Cent of Ca-pacity
January	285,137	17.7	331,777	19.8	534,055	31.9	721,414	43.7
February	275,929	18.5	385,500	26.3	583,137	39.2	.....	.....
March	256,793	15.3	588,209	36.6	668,056	41.5	.....	.....
April	335,321	21.6	643,009	41.5	591,728	36.7	.....	.....
May	455,302	27.1	745,063	44.4	598,915	35.8	.....	.....
June	603,937	37.4	985,337	61.2	578,108	36.7	.....	.....
July	701,322	45.1	369,938	23.0	547,794	34.0	.....	.....
August	668,155	39.8	378,023	23.1	624,497	37.3	.....	.....
September	575,161	35.6	370,306	23.0	614,933	39.7	.....	.....
October	572,897	35.5	343,962	20.6	686,741	41.1	.....	.....
November	430,358	26.7	366,119	22.9	681,820	42.3	.....	.....
December	600,639	38.7	418,630	26.1	661,515	42.7	.....	.....
Plus or minus yearly adjust-ment	(44,283)	...	(19,907)	...	.....	...	.....	...
Total for year	5,805,235	30.1	5,905,966	30.6	7,371,299	38.3	.....	...



"Froth-Flotation"

THE NEWEST
DEVELOPMENT IN

DUST COLLECTORS

*no moving parts
no wear
no repairs*

TROUBLE-FREE operation is assured. Dust-laden air is drawn to the distributing chamber—passed upward through "bubble-caps" (see insert) and successive layers of water and a frothing agent that trap both the large and fine dust particles.

High efficiencies are secured. No manual supervision is required. No replacement of filtering units. No fire hazard. Lowest operating costs. Full details and descriptive literature sent on request.

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Dust Collectors

CONVEYORS • ELEVATORS • HAND WINCHES • SKIP HOISTS • CHAINS
SPROCKETS • BEARINGS • TAKE-UPS • DUST COLLECTORS

Stainless Steel for Railroad Equipment

LIGHTER but stronger equipment, built of stainless steel to new designs, will answer the railroads' problems of passenger traffic, according to W. F. Detwiler, executive vice-president, Allegheny Steel Co., Brackenridge, Pa., in commenting on the new de luxe

day-coach which the Edward G. Budd Mfg. Co., Philadelphia, has delivered to the Atchison, Topeka & Santa Fe railroad. A large amount of Allegheny Metal, fabricated by the builder's own processes and designs, is contained in this car which is one-half the weight of a standard Santa Fe coach although of the same size.

The body is formed of hollow members, built up from sheet stain-

less steel by the shot-weld process, and covered with panels of the same metal. Although structurally stronger, and therefore safer, this new body weighs only one-quarter as much as a standard body.

PERSONALS

Operating Personnel Changed by J & L

IN preparation for a proposed program of new mill construction and plant expansion, which probably will include the large sheet-strip mill proposed for the Pittsburgh works, the Jones & Laughlin Steel Corp. has made the following changes in its operating staff:

S. S. MARSHALL has been appointed assistant general manager.



S. S. MARSHALL



H. D. STARK

Since 1929 he has been general superintendent of the Pittsburgh works. His entire steel business experience has been with Jones & Laughlin. He started in 1903 as a stake driver with the civil engineering department and advanced successively as master mechanic; assistant superintendent, Eliza works; assistant superintendent, South Side works; general superintendent, South Side works, and general superintendent, Pittsburgh works.

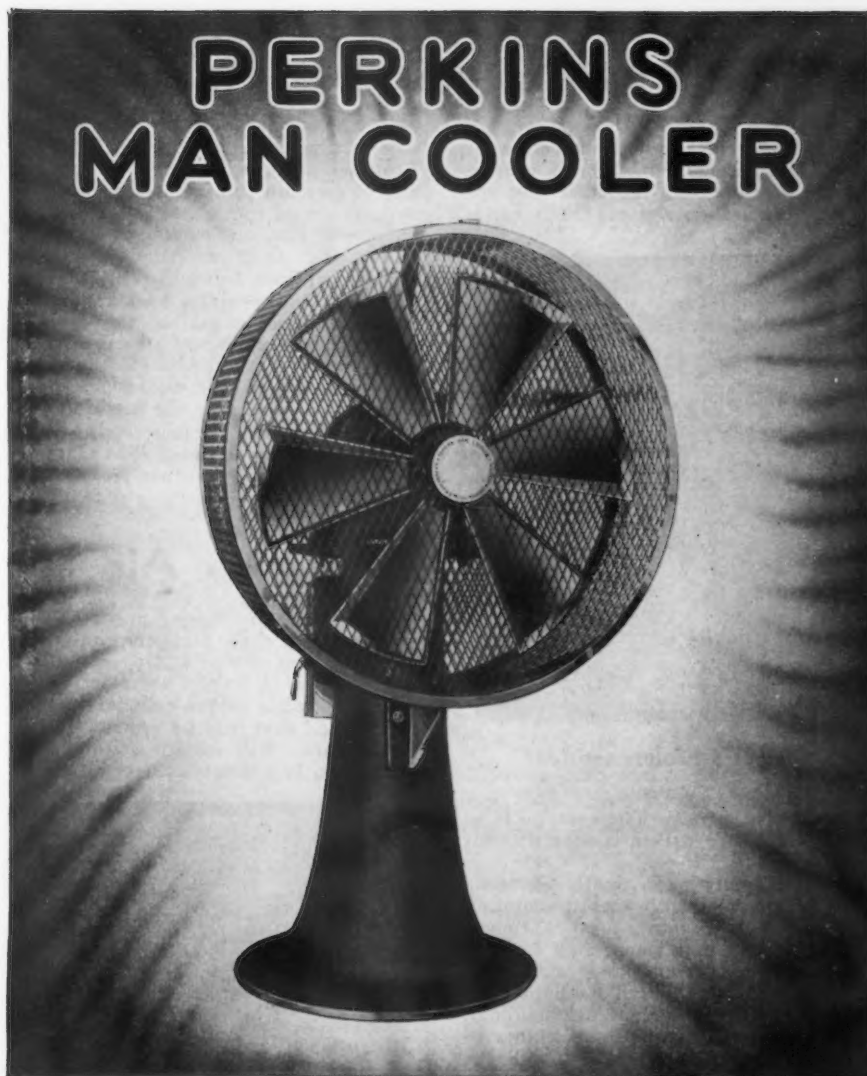
H. D. STARK, who since 1929 has been assistant general superintendent of the Pittsburgh works, has been appointed general superintendent. He started with Jones & Laughlin in 1899 as a blue-print boy in the engineering department of the South Side works and has successively occupied positions as superintendent of shops, assistant superintendent of steel works, superintendent of steel works, assistant general superintendent of the South Side works and assistant



C. L. McGRANAHAN



J. C. MURRAY



PERKINS MAN COOLER blows heat away. Because cold air is not introduced from the outside, its invigorating breeze does not chill. It produces refreshing recirculation of air of the same temperature in which the men are working.

**B. F. PERKINS & SON, Inc., HOLYOKE, MASS.
ENGINEERS AND MANUFACTURERS**

general superintendent of the Pittsburgh works.

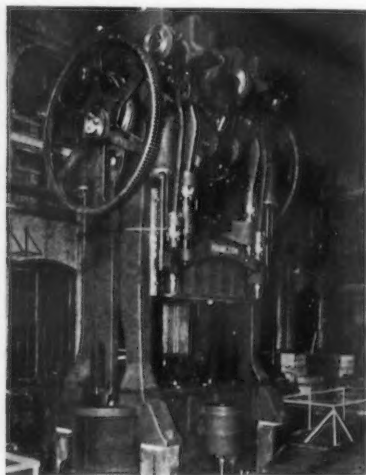
CHARLES L. McGRANAHAN has been engaged as assistant general superintendent of Pittsburgh works to supervise the construction of the new \$25,000,000 strip and sheet mill and to operate it when completed. For the past four years Mr. McGranahan has been with the Inland Steel Co. of Chicago, as superintendent of the strip and

sheet mill department. Prior to that he had been for 16 years with the American Sheet & Tin Plate Co. in Pittsburgh and Gary, Ind.

J. C. MURRAY, who has been appointed assistant general superintendent of the Pittsburgh works, has been since 1929 assistant general superintendent in charge of the North Side works. He is president of the Eastern States Blast

Shoe Eyelets and Freight Cars

"Stop Street"! A slight movement of one foot disengages the clutch, ever so little pressure with the other foot applies the brakes, and a 3000-lb. car is



"It has a tireless assistant"

brought to a stop. The exertion is so slight that the driver is scarcely conscious of it.

Yet the exertion is greater—the time much slower—than in similar operation of an 800,000-lb. power press. Throughout industry that young 20th Century Giant, the power press, substitutes mass production for village handicraft—raises output from dozens to millions, packs arsenals with the machines of war, loads kitchen shelves with the utilitarian implements of peace.

With equal facility it forms the metal eyelet for threading a shoelace and the shock-proof steel end of a freight car. In thousands of plants it takes in thousands of miles of metal sheets—cuts, forms, bends, draws, punches, shears them to shape. All these functions are performed with perfect accuracy, with unbelievable speed, each operation timed to a split second.

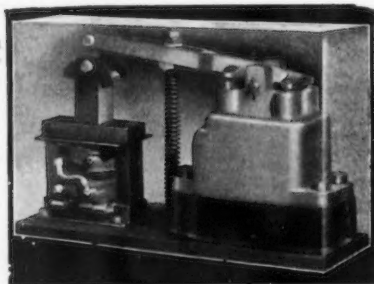
Air is the tireless assistant of clutches, gears and toggles—air, the colorless, invisible monster struggling for escape. Packed in cylinders attach-

ed, for instance, to this 750,000-lb. Hamilton press, it is released by valve and in its rush for freedom it brings more powerful forces into action. The operator's finger touches an electric button, air from a cylinder darts through a Ross Solenoid Valve, releases the brake—darts back through another valve, engaging the giant press's clutch. A sheet of steel has become part of an automobile. Another button is pressed, air disengages the clutch, resets the brake, the machine is momentarily idle. All in seconds—because air is lightning fast, Ross Operating Valves positive, capable of most delicate control.

Slacker Air

Air cylinders on power presses are placed where their plungers can act with least loss of time and power.

Ross Solenoid Valves are placed as close as possible to the cylinders they control and that may be remote from the operator. Bell wire is substituted for piping. It is unnecessary to fill use-



"A button is pressed—"

less pipes with slacker air that does no work. Air costs are reduced.

Ross Operating Valves—"The Bridle for Air Horsepower"—employ the poppet principle. They provide speed of operation—they automatically compensate for wear—they save air. They are manufactured for standard and special installations in widely varied industries by The Ross Operating Valve Company, 6488 Epworth Blvd., Detroit, Mich.

ing Jones & Laughlin he had been with the Illinois Steel Co. at Chicago, from 1912 to 1924.

W. H. HOLT, who has been appointed assistant superintendent of the steel works and blooming mills, Pittsburgh works, has been superintendent of the blooming mills, South Side works, since 1928. In 1916 he was employed in the engineering department of the Pennsylvania Railroad. He advanced through various positions until 1923 when he came to Jones & Laughlin as assistant superintendent of the labor department of the South Side works.

JAMES D. STEWART, who has been appointed superintendent of rolling mills, Pittsburgh works, has been, since 1930, assistant superintendent of rolling mills. He started in the engineering department of the Monongahela River Consolidated Coal & Coke Co., and was successively with the Bessemer & Lake Erie Railroad, and the Penn-



J. H. CAYLOR



W. J. BALLANTYNE

Furnace and Coke Oven Association. Mr. Murray joined the Jones & Laughlin organization in 1915 as a clerk in the Eliza blast furnace department.

J. H. CAYLOR, who has been appointed assistant general superintendent of the Pittsburgh works, has been, since 1924, superintendent of rolling mills at South Side works. He entered the steel business in 1907 with Carnegie Steel

Co. and subsequently was with Cambria Steel Co., Johnstown, Pa., and Donner Steel Co., Buffalo, N. Y., joining Jones & Laughlin in 1924.

W. J. BALLANTYNE, has been appointed superintendent of steel works and blooming mills at Pittsburgh works. He has been, since 1924, superintendent of open-hearth and Bessemer department, South Side works. Prior to join-

sylvania Railroad until 1923 when he joined Jones & Laughlin as assistant superintendent of the No. 14 mill, South Side works.

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R. A. WEAVER, president, Ferro Enamel Corp., Cleveland, sailed Feb. 11 for South America to visit new plants built by his company in 1935 in Argentina and Brazil.

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L. A. PADDOCK, president, American Bridge Co., Pittsburgh, subsidiary of the United States Steel Corp., has been made president of the Virginia Bridge Co., which was organized in New Jersey to succeed Virginia Bridge & Iron Co. The latter company was acquired about two weeks ago by the Tennessee Coal, Iron & Railroad Co., another United States Steel



W. H. HOLT



J. D. STEWART

If You Are Using Sulphuric Acid . . .

Use Equipment that is Sulphuric Acid proof

DURIRON

"DURIRON" will handle Sulphuric Acid in all concentrations and at all temperatures. It is available in pumps from 1" discharge to 8" discharge, valves, pipe and fittings, steam jets, tank outlets, ejectors and numerous other standard items as well as in special castings.

DURIMET

FOR a Machinable alloy, "DURIMET", a nickel-chromium *low carbon* alloy steel (stainless) is ideal for sulphuric under oxidizing conditions: for all concentrations, including oleum, at room temperature; for boiling, up to 15% concentration with or without oxidizing salts such as ferric sulphate; for 93-98% up to 250°F.; for over 98% at all temperatures, including boiling.

ALCUMITE

FOR sulphuric acid under non-oxidizing conditions, "ALCUMITE", a copper base aluminum alloy, is most satisfactory machinable alloy. In it, too, are produced pumps, valves, pipe fittings, and other standard items as well as special castings and hot rolled rod.

WHEN it comes to Sulphuric Acid, come to The Duriron Company for something to handle it.

And for Muriatic Acid, "DURICHLOR" is equally satisfactory.

THE DURIRON COMPANY, Inc.

438 N. Findlay St.

Dayton, Ohio

Corp. subsidiary. Mr. Paddock will serve concurrently as president of the American Bridge Co. and Virginia Bridge Co. FRANK B. THOMPSON, vice-president of the American Bridge Co., has been named auditor of the Virginia Bridge Co.

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W. S. ROBERTS, who has been identified with the General Motors Corp. since 1922, has been appointed general manager of the newly organized Southern California division of the corporation, which will operate an assembly plant now under construction at Los Angeles. He was graduated

from Virginia Polytechnic Institute in 1911.

❖ ❖ ❖

L. D. HOLLAND, formerly sales manager of the Western division of E. F. Houghton & Co., Philadelphia, has been made manager of research development with headquarters in Philadelphia. A. A. MILLER, formerly head of the Cincinnati office, has been promoted to the position of Western sales manager, with office in San Francisco.

❖ ❖ ❖

NEIL CURRIE, JR., for the past six years manager of the Phila-

Philadelphia works of the General Electric Co., has been made manager of the company's Fort Wayne works, succeeding WALTER S. GOLL, who has retired. R. V. GOOD, previously assistant manager at Philadelphia, has been appointed manager. Mr. Currie was graduated from the University of Minnesota in 1908 and in June of that year entered the employ of the Western Electric Co. in the power apparatus department. When this was taken over by the General Electric Co., he joined the motor department at Pittsfield, of which he was made engineer in 1920. Five years later he became managing engineer and in 1929 manager of the Philadelphia works. Mr. Good came to the United States in 1911 after his graduation from the Royal Technical School at Stuttgart, and joined the General Electric Co. in 1913. He held various positions and in 1923 was made assistant to the superintendent of the induction motor department. In 1928 he was selected as superintendent of the milling department and the following year as assistant manager at Philadelphia.

♦ ♦ ♦

R. H. SONNEBORN, for the past 10 years identified with the Detroit office of the Youngstown Sheet & Tube Co., has been appointed special sales representative of the tubular division of the Republic Steel Corp., with headquarters in Cleveland. He was previously identified with the Colorado Fuel & Iron Co. CHARLES W. EAST, heretofore assistant manager of sales in the pipe division, has been made district sales manager at Houston, Tex., succeeding ROBERT E. LANIER, who has resigned.

♦ ♦ ♦

J. G. WEST, JR., who for the past six years has been assistant manager in charge of blast furnace operations, Jones & Laughlin Steel Corp., has resigned. He has spent his entire business career in the steel industry, having previously been connected with National Tube Co., Carnegie Steel Co. and Illinois Steel Co.

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MATTHEW H. MAWHINNEY has retired as a partner from the Salem Engineering Co., Salem, Ohio, but will continue as consulting engineer, supervising all of the engineering and development activities of the company. The business will be continued by S. F. KEENER under the same name of Salem Engineering Co., at Salem, and Salem Engineering Co. of Canada, at Welland, Ont. The partnership was dissolved by mutual consent.

LESTER C. KLEIN has been appointed assistant to the president, United States Steel Corp., to succeed JOHN HUGHES, who retired Feb. 1 under the corporation's pension plan. Mr. Klein has been an understudy of Mr. Hughes for many years and has an intimate knowledge of the responsibilities of his new office. These duties include supervising purchases of imported products such as pig tin, palm oil and other raw and semi-finished materials, conforming to the technicalities of customs regulations and practices in exporting the products of subsidiary companies, and generally handling matters relating to domestic and foreign tariffs on iron and steel products. During the war Mr. Klein was trade adviser in charge of non-ferrous metals, Bureau of Imports, War Trade Board, Washington, a bureau which granted import licenses to American users of



L. C. KLEIN

foreign non-ferrous metals and ores. In July, 1918, when Mr. Hughes, as chairman of the pig tin sub-committee of the War Industries Board, went abroad as a member of the board's mission to London and Paris, Mr. Klein was recalled to New York to act for Mr. Hughes during the latter's absence in supervising the distribution of all pig tin imports and the handling of palm oil imported for use by the tin plate industry. Mr. Klein was born in Brooklyn, N. Y., Sept. 25, 1886. He started employment in 1901. On Feb. 12, 1904, he became identified with the United States Steel Products Co. as assistant to Mr. Hughes, then general agent of that company. He continued as assistant to Mr. Hughes when the latter became assistant to the president of the United States

Steel Corp. in 1912 and continued in that capacity until Feb. 1, this year, when he succeeded to Mr. Hughes' post. Mr. Klein is a member of the American Tin Trade Association, Inc., and the American Iron and Steel Institute.

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G. L. LACHER, whose resignation as managing editor of THE IRON AGE was announced last week, has been appointed editor of the *United States Steel News*, a new monthly publication for employees of all subsidiaries of the United States Steel Corp. ELLIOTT S. HANSON, heretofore with the United States Steel Products, Inc., has been appointed assistant editor of the *United States Steel News*.

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JOHN RUSSELL FOX has been appointed by the American Bridge Co. as contracting manager of the bridge and structural department in charge of all contracting and erecting activities on the Pacific Coast. He succeeds the late EDWARD J. SCHNEIDER. Mr. Fox's first association with the American Bridge Co. was in 1910 in the shops and drafting rooms at Gary, Ind. Later his work in the erecting department took him into the Duluth, St. Louis and Chicago territories. In 1921 he was transferred to the San Francisco office of the United States Steel Products Co. as a contracting engineer. He is 44 years of age, a member of the American Society of Civil Engineers and Engineers' Club.

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H. SEYMOUR WALCOTT, who has been identified with the office equipment industry for many years, has been appointed New York sales manager of the All-Steel-Equip Co., Inc., Aurora, Ill. He will make his headquarters at 56 West Twenty-second Street.

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J. Z. COLLIER, who has been assistant general manager, Jones & Laughlin Steel Corp., for the past six years, has resigned. His entire business career has been devoted to the steel industry. Mr. Collier joined the Jones & Laughlin company about 18 years ago. Prior to that connection he was assistant general superintendent of the Whitaker-Glessner Co., parent organization of the Wheeling Steel Corp. Earlier he was associated with Central Alloy Co., which later merged with Republic Steel Corp., and with the Atlanta Steel Co., which is now the Atlantic Steel Co.

Capital Goods Index in Further Decline

AFTER allowing for normal seasonal changes, THE IRON AGE index of capital goods activity last week declined practically three points to an estimated 73.9 per cent of the 1925 to 1927 average. It is therefore lower than it has been since the third week in November, when a level of 72.2 prevailed. At this time a year ago, however, the index stood 9 per cent beneath the new reading, while two years ago it was 29 per cent lower. The failure of industrial operating rates to expand by as much as an amount normal for this time of year has been responsible for the gradual reductions noted in the adjusted index over the past few weeks.

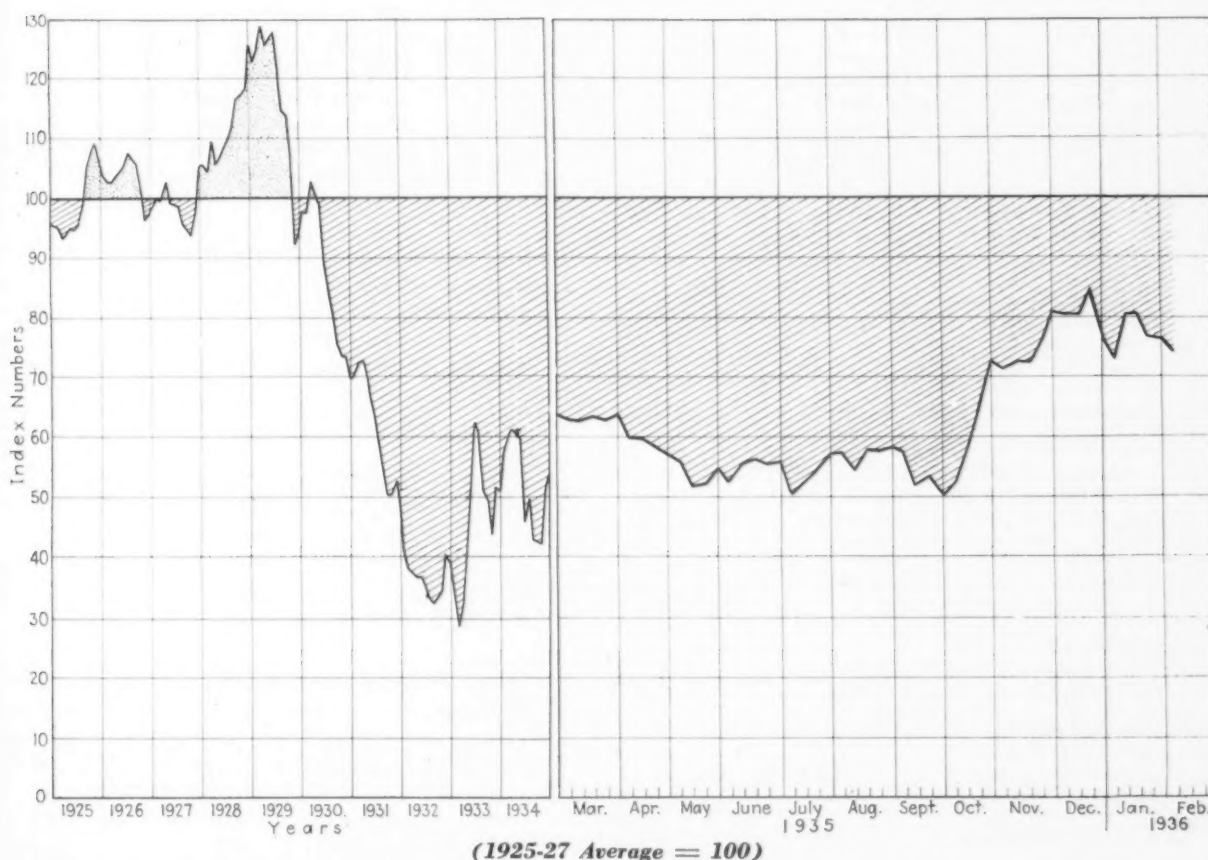
The Iron Age Weekly Index Numbers of Capital Goods Activity

(1925-'27 = 100)

Last week (est.)	73.9
Preceding week (rev.)	76.8
Same week last month	81.1
Same week 1935	68.0
Same week 1934	57.5
Same week 1933	34.7
Same week 1932	42.2
Same week 1931	71.6
Same week 1930	99.5
Same week 1929	123.5

In addition, a sharply declining automobile factor depressed the capital goods index more than anything else. The advance of 1½ points in the country's aggregate steel-making rate was roughly equal to the upward change customary as between the first and second weeks of February. Accordingly, THE IRON AGE's steel activity index, after adjustment, remained stationary, and contributed no gain to the combined index.

Inclement weather and the aftermath of a possibly over-active fourth quarter are still having an effect on industrial conditions which THE IRON AGE capital goods activity index measures.



THE Iron Age Index of Capital Goods Activity. The years 1925 to 1934 are plotted by months, by weeks since 1935.

Components of the index: Steel ingot production rate, from THE IRON AGE; revenue freight carloadings of forest products, from Association of American Railroads; automobile production from Cram's Automotive Reports; heavy construction contract awards, from Engineering News Record; index of productive activity in Pittsburgh district, from Bureau of Business Research of University of Pittsburgh.

Current Metal Working Activity Statistically Shown

These Data Are Assembled by The Iron Age from Recognized Sources and Are Changed Regularly as More Recent Figures Are Made Available.

	January, 1936	December, 1935	Year 1934	January, 1935	Year 1935
Raw Materials:					
Lake ore consumption (gross tons) ^a		3,087,236	22,113,951	2,280,393	30,848,179
Coke production (net tons) ^b		3,488,818	31,821,576	2,889,552	35,209,240
Pig Iron:					
Pig iron output—monthly (gross tons) ^c	2,025,885	2,106,453	15,911,188	1,477,336	21,007,802
Pig iron output—daily (gross tons) ^c	65,351	67,950	43,592	47,656	57,556
Castings:					
Malleable castings—production (net tons) ^d		45,598	369,458	43,400	466,395
Malleable castings—orders (net tons) ^d		42,573	354,146	44,568	452,611
Steel castings—production (net tons) ^d		37,793	450,087	29,035	398,988
Steel castings—orders (net tons) ^d		40,529	434,131	32,349	400,157
Steel Ingots:					
Steel ingot production—monthly (gross tons) ^e ..	3,049,439	3,081,807	25,599,118	2,871,531	33,425,576
Steel ingot production—daily (gross tons) ^e	112,942	123,272	82,312	106,353	107,478
Steel ingot production—per cent of capacity ^e ...	51.18	55.68	37.38	48.04	48.55
Employment in Steel Industry:					
Total employees ^e			409,349	407,071	.....
Total payrolls (thousands of dollars) ^e			\$457,848	\$44,329	.....
Average hours worked per week ^e			30.4	33.6	.....
Finished Steel:					
Trackwork shipments (net tons) ^g	3,366	3,025	49,110	2,333	42,229
Steel rail orders (gross tons) ^g	214,541	88,100	.....	51,000	533,120
Sheet steel sales (net tons) ^g		203,318	1,830,682	321,831	2,473,489
Sheet steel production (net tons) ^g		208,774	1,895,460	235,714	2,424,990
Fabricated shape orders (net tons) ^g		96,235	1,054,382	64,306	1,068,603
Fabricated shape shipments (net tons) ^g		76,214	1,116,222	89,627	1,095,216
Fabricated plate orders (net tons) ^d		35,584	241,992	18,778	258,315
Reinforcing bar awards (net tons) ^e		29,025	182,351	17,750	318,340
U. S. Steel Corp. shipments (tons) ^h	721,414	661,515	5,925,873	534,055	7,371,299
Ohio River steel shipments (net tons) ⁱ		61,666	633,197	52,656	925,174
Fabricated Products:					
Automobile production, U. S. and Canada ^k		421,579	2,869,963	303,392	4,182,591
Construction contracts, 37 Eastern States ^l		\$264,136,500	\$1,543,108,400	\$99,773,900	\$1,844,544,900
Steel barrel shipments (number) ^d		541,375	6,682,400	438,334	6,872,452
Steel furniture shipments (dollars) ^d		\$1,558,095	\$11,807,843	\$1,139,497	\$15,523,679
Steel boiler orders (sq. ft.) ^d		684,735	4,368,563	391,784	6,245,158
Locomotive orders (number) ^m	14	2	183	0	30
Freight car orders (number) ^m	1,050	10,030	24,611	24	18,158
Machine tool index ⁿ		98.3	†54.1	65.5	†99.9
Foundry equipment index ⁿ		118.1	†67.5	86.6	†119.5
Foreign Trade:					
Total iron and steel imports (gross tons) ^p		93,678	316,761	22,784	469,954
Imports of pig iron (gross tons) ^p		16,289	115,470	2,033	130,937
Imports of all rolled steel (gross tons) ^p		21,812	113,354	15,054	216,567
Total iron and steel exports (gross tons) ^p		239,269	2,832,764	262,740	3,067,336
Exports of all rolled steel (gross tons) ^p		85,590	951,380	73,396	897,749
Exports of finished steel (gross tons) ^p		78,625	833,559	66,523	767,456
Exports of scrap (gross tons) ^p		142,135	1,835,554	179,630	2,047,290
British Production:					
British pig iron production (gross tons) ^r	595,500	559,300	5,978,500	521,200	6,426,000
British steel ingot production (gross tons) ^r	912,500	811,500	8,859,700	757,800	9,842,400
Non-Ferrous Metals:					
Lead production (net tons) ^a		42,020	412,298	29,314	421,764
Lead shipments (net tons) ^a		42,333	379,807	33,695	433,456
Zinc production (net tons) ^e	41,826	40,136	366,933	35,135	431,085
Zinc shipments (net tons) ^e	46,468	41,466	352,663	35,455	465,124
Deliveries of tin (gross tons) ^v	6,635	5,360	46,215	4,600	59,110

†Three months' average.

Source of figures: ^a Lake Superior Iron Ore Association; ^b Bureau of Mines; ^c THE IRON AGE; ^d Bureau of the Census; ^e American Iron and Steel Institute; ^f National Association of Flat-Rolled Steel Manufacturers; ^g American Institute of Steel Construction; ^h United States Steel Corp.; ⁱ United States Engineer, Pittsburgh; ^j When preliminary, from Automobile Manufacturers Association—Final figures from Bureau of the Census; ^k F. W. Dodge Corp.; ^l Railway Age; ^m National Machine Tool Builders Association; ⁿ Foundry Equipment Manufacturers Association; ^o Department of Commerce; ^p British Iron and Steel Federation; ^q American Bureau of Metal Statistics; ^r American Zinc Institute, Inc.; ^s New York Commodities Exchange.

SUMMARY OF THIS WEEK'S BUSINESS

Increasing Demand From Heavy Industries Again Raises Steel Production

Ingot Output Up One Point to 53 Per Cent of Capacity—Requirements Of Railroads Expand Further—Automotive Releases Still Lag

CONTINUED support from the heavy industries has again enabled steel production to rise moderately, despite the depressing effects of unseasonably cold weather and declining automobile production. Ingot output this week is up one point to 53 per cent of capacity, production having risen two points in both the Pittsburgh and Wheeling districts and one point at Chicago. Other major producing areas held their own.

Additional strength in scrap prices may also be considered a bullish factor in the current situation, although weather conditions have been largely responsible for gains in all districts. Scrap is not coming out in sufficient volume to supply the needs of melters, and THE IRON AGE composite price of No. 1 heavy melting steel has risen to \$13.75 a gross ton, the highest level since September, 1930. The pig iron and finished steel composite prices are unchanged at \$18.84 a gross ton and 2.109c. a lb. respectively.

RAILROAD business again dominates the steel market this week. The Bessemer & Lake Erie and Union Railroads, United States Steel Corp'n. subsidiaries, have ordered 3000 freight cars which will require 60,000 tons of steel. These cars are urgently needed for the seasonal ore movement and their construction will be rushed. Two-thirds of the cars will be built largely of high-tensile steel.

The Milwaukee Road will build 1500 freight and 27 passenger cars in its own shops and the Western Pacific has ordered 100 ballast cars. The Lehigh Valley and the Lackawanna are ordering steel freely for their car construction and repair programs and Chicago district mills are receiving releases daily from the carriers.

The New York Central has placed 38,000 tons of rails with three United States and one Canadian producer and has distributed the accompanying accessories among 22 companies. The Denver & Rio Grande Western has ordered 10,000 tons of rails from the Colorado mill and the Kansas, Oklahoma & Gulf is in the market for 6750 tons of rails and fastenings. The Rock Island and the Milwaukee Road inquiries, totaling 65,000 tons of rails, are still pending.

PIPE LINE activity is featured by an order for 15,000 tons of 20-in. material taken by the Milwaukee maker. The Standard Oil Co. of Indiana is in the market for a 75-mile line and 9000 tons of steel will be required for a water pipe line at St. Louis. A number

of oil and gas carrying projects are becoming more active and Supreme Court action on public utility legislation will probably not be awaited before some of them are undertaken.

Shipbuilding is rapidly achieving its normal position as a market factor in the East. Some yards are booked to capacity over the remainder of the year and steel is yet to be bought for a large ocean liner to be built at Newport News, Va., which will take 15,000 tons. Four tankers and two cargo-passenger vessels recently placed or actively pending will require an additional 30,000 tons.

WHILE shipments of construction steel are almost at a standstill because of the weather, new contracts are being let regularly and inquiries are accumulating. Fabricated structural steel lettings this week amount to 19,650 tons, compared with 16,400 tons last week, while new projects total 25,350 tons, against only 11,250 tons in the preceding comparable period. The outstanding new job is the Outer Drive development at Chicago which will require 16,500 tons of shapes and 1500 tons of reinforcing bars. About 9550 tons of reinforcing steel will be needed for Fort Peck Dam tunnels at Wiota, Mont.

The most that can be said for automotive demand is that the time is undoubtedly closer when heavy orders for spring production will be placed. At Chicago the downward tendency in automotive releases seems to have been checked and signs of improvement are discernible at Cleveland and Detroit. Tin plate orders are increasing and production is approaching 65 per cent of capacity.

NEW extras on semi-finished steel issued last week by the leading producer are more in the nature of a reclassification than of a radical change. Maintenance of the new base prices on these commodities after Feb. 15 is of far more concern to both makers and consumers. Shipments in the last week before the deadline, however, are not appreciably larger than they have been.

Quotations on finished steel show no additional weakness and it is significant that makers of bars, sheets and strip steel are unwilling to cover large automotive buyers through the remainder of the first half. Second quarter quotations should be announced next week and the possibility of advances has by no means disappeared.

A Comparison of Prices

Market Prices at Date, and One Week, One Month, and One Year Previous:
Advances Over Past Week in Heavy Type, Declines in Italics

Pig Iron

Per Gross Ton:	Feb. 11, 1936	Feb. 4, 1936	Jan. 14, 1936	Feb. 12, 1935
No. 2 fdy., Philadelphia.....	\$21.3132	\$21.3132	\$21.3132	\$20.26
No. 2, Valley furnace.....	19.50	19.50	19.50	18.50
No. 2 Southern, Cin'ti.....	20.2007	20.2007	20.2007	19.13
No. 2, Birmingham†.....	15.50	15.50	15.50	14.50
No. 2 foundry, Chicago*.....	19.50	19.50	19.50	18.50
Basic, del'd eastern Pa.....	20.8132	20.8132	20.8132	19.76
Basic, Valley furnace.....	19.00	19.00	19.00	18.00
Malleable, Chicago*.....	19.50	19.50	19.50	18.50
Malleable, Valley.....	19.50	19.50	19.50	18.50
L. S. charcoal, Chicago.....	25.2528	25.2528	25.2528	24.04
Ferromanganese, seab'd car-lots.....	75.00	75.00	75.00	85.00

†This quotation is for delivery in South; in the North prices are 38c. a ton under delivered quotations from nearest Northern furnace.

*The switching charge for delivery to foundries in the Chicago district is 60c. per ton.

Finished Steel

Per Lb.:	Feb. 11, 1936	Feb. 4, 1936	Jan. 14, 1936	Feb. 12, 1935
Hot-rolled annealed sheets, No. 24, Pittsburgh.....	2.40	2.40	2.40	2.40
Hot-rolled annealed sheets, No. 24, Gary.....	2.50	2.50	2.50	2.50
Sheets, galv., No. 24, P'gh...	3.10	3.10	3.10	3.10
Sheets, galv., No. 24, Gary...	3.20	3.20	3.20	3.20
Hot-rolled sheets, No. 10, P'gh	1.85	1.85	1.85	1.85
Hot-rolled sheets, No. 10, Gary	1.95	1.95	1.95	1.95
Wire nails, Pittsburgh.....	2.40	2.40	2.40	2.60
Wire nails, Chicago, dist. mill	2.45	2.45	2.45	2.65
Plain wire, Pittsburgh.....	2.30	2.30	2.30	2.30
Plain wire, Chicago dist. mill	2.35	2.35	2.35	2.35
Barbed wire, galv., Pittsburgh	2.80	2.80	2.80	3.00
Barbed wire, galv., Chicago dist. mill.....	2.85	2.85	2.85	3.05
Tin plate, 100 lb. box, P'gh...	\$5.25	\$5.25	\$5.25	\$5.25

Scrap

Per Gross Ton:	Feb. 11, 1936	Feb. 4, 1936	Jan. 14, 1936	Feb. 12, 1935
Heavy melting steel, P'gh... \$14.75	\$14.75	\$14.50	\$14.50	\$13.25
Heavy melting steel, Phila...	12.75	12.75	12.50	11.75
Heavy melting steel, Ch'go...	13.75	13.75	13.25	11.50
Carwheels, Chicago.....	13.50	13.00	13.25	12.00
Carwheels, Philadelphia.....	14.75	14.75	13.00	12.50
No. 1 cast, Pittsburgh.....	14.25	14.25	14.25	13.75
No. 1 cast, Philadelphia.....	13.00	13.00	13.00	11.00
No. 1 cast, Ch'go (net ton)...	12.50	12.00	12.00	10.00
No. 1 RR. wrot., Phila.....	13.25	13.25	12.25	11.25
No. 1 RR. wrot., Ch'go (net)	12.50	12.00	11.00	9.50

Rails, Billets, etc.

Per Gross Ton:	Feb. 11, 1936	Feb. 4, 1936	Jan. 14, 1936	Feb. 12, 1935
Rails, heavy, at mill.....	\$36.37 1/2	\$36.37 1/2	\$36.37 1/2	\$36.37 1/2
Light rails, Pittsburgh.....	35.00	35.00	35.00	35.00
Rerolling billets, Pittsburgh.	29.00	29.00	29.00	27.00
Sheet bars, Pittsburgh.....	30.00	30.00	30.00	28.00
Slabs, Pittsburgh.....	29.00	29.00	29.00	27.00
Forging billets, Pittsburgh...	35.00	35.00	35.00	32.00
Wire rods, Pittsburgh.....	40.00	40.00	40.00	38.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb...	1.80	1.80	1.80	1.70

Finished Steel

Per Lb.:	Cents	Cents	Cents	Cents
Bars, Pittsburgh.....	1.85	1.85	1.85	1.80
Bars, Chicago.....	1.90	1.90	1.90	1.85
Bars, Cleveland.....	1.90	1.90	1.90	1.85
Bars, New York.....	2.20	2.20	2.20	2.13
Plates, Pittsburgh.....	1.80	1.80	1.80	1.80
Plates, Chicago.....	1.85	1.85	1.85	1.85
Plates, New York.....	2.09	2.09	2.09	2.08
Structural shapes, Pittsburgh	1.80	1.80	1.80	1.80
Structural shapes, Chicago...	1.85	1.85	1.85	1.85
Structural shapes, New York	2.06 1/4	2.06 1/4	2.06 1/4	2.05 1/4
Cold-finished bars, Pittsburgh	2.10	2.10	2.10	2.10
Hot-rolled strips, Pittsburgh.	1.85	1.85	1.85	1.85
Cold-rolled strips, Pittsburgh	2.60	2.60	2.60	2.60

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our detailed price tables.

Coke, Connellsville

Per Net Ton at Oven:	Feb. 11, 1936	Feb. 4, 1936	Jan. 14, 1936	Feb. 12, 1935
Furnace coke, prompt.....	\$3.65	\$3.65	\$3.65	\$3.85
Foundry coke, prompt.....	4.25	4.25	4.25	4.60

Metals

Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Electrolytic copper, refinery.	9.25	9.25	9.25	8.75
Lake copper, New York.....	9.37 1/2	9.37 1/2	9.37 1/2	9.12 1/2
Tin (Staits), New York.....	48.12 1/2	48.00	47.75	50.75
Zinc, East St. Louis.....	4.85	4.85	4.85	3.70
Zinc, New York.....	5.22 1/2	5.22 1/2	5.22 1/2	4.05
Lead, St. Louis.....	4.35	4.35	4.35	3.35
Lead, New York.....	4.50	4.50	4.50	3.50
Antimony (Asiatic), N. Y...	12.87 1/2	12.87 1/2	12.62 1/2	14.50

The Iron Age Composite Prices

Finished Steel

Feb. 11, 1936	2.109c. a Lb.
One week ago	2.109c.
One month ago	2.130c.
One year ago	2.124c.

Based on steel bars, beams, tank plates, wire, rails, black pipe, sheets and hot-rolled strips. These products represent 85 per cent of the United States output.

Pig Iron

\$18.84 a Gross Ton
18.84
18.84
17.90

Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.

Steel Scrap

\$13.75 a Gross Ton
13.67
13.42
12.17

Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.

	HIGH	Low	HIGH	Low	HIGH	Low
1935	2.130c., Oct. 1;	2.124c., Jan. 8	\$18.84, Nov. 5;	\$17.83, May 14	\$13.42, Dec. 10;	\$10.33, April 23
1934	2.199c., April 24;	2.008c., Jan. 2	17.90, May 1;	16.90, Jan. 27	13.00, Mar. 13;	9.50, Sept. 25
1933	2.015c., Oct. 3;	1.867c., April 18	16.90, Dec. 5;	13.56, Jan. 3	12.25, Aug. 8;	6.75, Jan. 3
1932	1.977c., Oct. 4;	1.926c., Feb. 2	14.81, Jan. 5;	13.56, Dec. 6	8.50, Jan. 12;	6.43, July 5
1931	2.037c., Jan. 13;	1.945c., Dec. 29	15.90, Jan. 6;	14.79, Dec. 15	11.33, Jan. 6;	8.50, Dec. 29
1930	2.273c., Jan. 7;	2.018c., Dec. 9	18.21, Jan. 7;	15.90, Dec. 16	15.00, Feb. 18;	11.25, Dec. 9
1929	2.317c., April 2;	2.273c., Oct. 29	18.71, May 14;	18.21, Dec. 17	17.58, Jan. 29;	14.08, Dec. 3
1928	2.286c., Dec. 11;	2.217c., July 17	18.59, Nov. 27;	17.04, July 24	16.50, Dec. 31;	13.08, July 2
1927	2.402c., Jan. 4;	2.212c., Nov. 1	19.71, Jan. 4;	17.54, Nov. 1	15.25, Jan. 11;	13.08, Nov. 22

Pittsburgh Steel Ingot Output Rises Two Points



Wheeling District Rate Also Higher
As Demand For Steel Gradually
Expands—Scrap Prices Higher

PITTSBURGH, Feb. 11.—Scattered improvement from miscellaneous sources and a better flow of releases for steel going into railroad car construction have lifted ingot production in the Pittsburgh district this week two points to 38 per cent. The belief is quite general that this trend will continue on a moderate scale through February.

The placing of orders for 3000 freight cars and 24 locomotives by the Bessemer & Lake Erie and Union railroads portends prompt placement of additional steel orders in this district. The Bessemer & Lake Erie, it is understood, is in urgent need of cars for the ore season next spring, and the car building program will be expedited as much as possible. At least part of the high-tensile material to be used in 2000 cars will be rolled at the new McDonald, Ohio, mill, according to reports here.

Releases from the automobile industry have subsided further, but flat-rolled steel producers at Pittsburgh look for an early pick-up in anticipation of spring activity in retail and used car markets.

Operations in the Valleys and nearby Northern Ohio mills, despite a lack of flat-rolled steel orders from automotive channels, are well sustained at 60 per cent of capacity, with increased production an early possibility. Output in the Wheeling district has increased two points to 76 per cent.

Reinforcing steel requirements for the Fort Peck dam project are reaching sizable proportions, with the next large bid to be taken Feb. 21. Fabricated structural steel is moving in practically unchanged volume. Tin plate production this week is slightly higher at 60 to 65 per cent. Sheet and strip operations, while suffering lack of automotive tonnage, are managing to hold their own at 65 per cent and 40 per cent respectively.

Based largely on the continued severity of weather most scrap prices are 25c. a ton higher. Cold weather likewise has pushed up prices for domestic and slack coals.

Pig Iron

Although demand in February is at a faster rate than that in January, the limited tonnage on individual orders is scarcely sufficient to add to furnace backlogs. There is some call for quick carload shipments in lieu of barge delivery, which is still prevented by ice jams in local rivers. Melt at heating equipment plants is fairly heavy, but schedules at most foundries in this district are spotty. Prices seem to be uniformly steady.

Semi-Finished Steel

The Carnegie-Illinois Steel Corp'n. has issued a new list of extras covering billets, blooms, slabs, rerolling billets and sheet bars, to become effective immediately. The new set-up covers reclassification of terminology and changes in silicon extras where minimum content determines the extra cost. Extras for silicon are \$2 and more for 0.16 to 0.20 per cent, and \$4 for 0.21 to 0.40 per cent, both minimum ranges in any standard range; \$2 for 0.16 to 0.20 where the minimum limit only is specified, and \$4 for 0.21 to 0.40 where limit only is specified.

Slackened automobile activity is depressing this market. Demand for sheet bars and forging stock has let up considerably. Little anxiety is manifest here over the prospective uniform adherence to the present semi-finished quotations, which were nominally established last fall. Non-integrated strip steel makers have not covered substantially in anticipation of the higher rerolling billet price, and there is still some doubt as to when the new semi-finished prices will meet their first crucial test.

Bars

Demand since the beginning of February has leveled off with miscellaneous volume maintaining satisfactory proportions and automotive tonnage holding to its recent slow rate. At the moment, no indications are evident when heavier automotive specifications will be forthcoming. Shipments to cold finishers are lagging. Small-lot

business is taking full extras and prices, and the lack of interest in automotive centers is tending to evaporate some uncertainty as to prices, which are displaying a slightly firmer tone.

Bolts, Nuts and Rivets

Demand from car builders is the most promising feature in this market. February specifications, as a result, have maintained the improvement begun in January and offer prospects of a more marked increase in business later in February. Meanwhile automobile business is slow, with no promise of substantially heavier releases for the time being. Demand from barge yards and other ship-building enterprises is quiet.

Reinforcing Steel

The Kansas City Engineer office will take bids on Feb. 21 for about 9550 tons of reinforcing steel for the Fort Peck dam tunnels at Wiota, Mont. Of that quantity about 7500 tons will be 1½ in. square deformed, and about 1750 tons will be 1¼ in. The remainder will run smaller, ½ in. round and up. The immediate problem before mills is the determination of who are established jobbers. Until definite classification is accomplished, a solution to the present irregular trend in distributors' prices will be forestalled.

Cold-Finished Bars

The aftermath of the active shipping movement in January is still pronounced. Consumers are fairly well covered for February, and a fresh buying movement probably will not be initiated until the automotive industry shakes off its present slump.

Plates and Shapes

The Pittsburgh Coal Co. has ordered 10 barges, entailing 1450 tons of plates and small shapes, from Treadwell Construction Co. Repair work still is hampered by frozen rivers. The placing of car orders by Bessemer & Lake Erie and Union railroads will result soon in the allocation of some plate orders by car builders to mills in this district.

Although the current list of structural steel awards lengthened somewhat, individual tonnages are insignificant. State highway bridge construction projects continue to dominate weekly reports. New business slipped rather badly in total volume.

Tubular Goods

Demand in this market remains steady, with oil-country goods maintaining the lead in the aggregate movement. Shipments con-

tinue to be impeded by adverse weather in many districts. No improvement has been noticeable this month in automobile demand for mechanical tubing. The granting of an additional 5 per cent discount to jobbers on butt-weld pipe of 3 in. and smaller in diameter has failed to affect the seamless or lap-weld markets. Only an extremely small quantity of seamless tubing is sold on the butt-weld base for sizes under 2 in. Litigation seems to be the chief hurdle to the definite launching of the natural gas line from Indiana to the Detroit area.

Wire Products

Demand is far from lively, chiefly as a result of severe weather conditions and the recession in the automobile industry. Demand from the farm areas is particularly affected by freezing weather. Disturbances in the wire nail base price in other districts have not become evident in this area.

Sheets

Miscellaneous specifications in the past week were increased while automotive releases remained in reduced volume. Operations are holding at around 65 per cent of capacity. Weakness in prices has spread to practically all grades with the possible exception of long ternes, which have remained firm in most districts. A recently conceived new set of extras, representing both increases and reductions, has not yet been applied.

Tin Plate

Output of a leading producer has been stepped up this week to about 77 per cent, and operations for the tin plate industry are slightly higher at 60 to 65 per cent of capacity. A fair demand from the can makers is in evidence, and some stocking is under way. Packers likewise are laying in stocks of cans in anticipation of early crops.

Export orders have been in noticeably increased volume. A leading producer has opened its New Castle, Pa., plant for hot-rolling plate for tinning at its Shenango plant after a prolonged shut-down.

Strip Steel

Demand and operations are spotty. The most serious lack is automotive orders, which have been drastically reduced for the past several weeks. Miscellaneous takings, while not particularly robust, are relatively steady. Mill backlogs are spread pretty thin, and operations are more susceptible to daily order sheets. Output for the strip industry in the current week probably will not better 40 per cent of capacity.

Coal and Coke

Strong demand for domestic lump coal in the Mid-West and Northwest has pushed prices up to 50c. a ton higher in the past week. The closing of river transportation, owing to ice jams, is diverting many shipments to rail delivery. As a consequence, some mines are enjoying a good demand for slack, which has accordingly increased prices at Western Pennsylvania mines an average of 10c. a ton. While heating coke is sharing in the current emergency demand, furnace and foundry grades are relatively quiet.

Scrap

Prices for practically all grades, excepting cast and blast furnace scrap, have edged to a new high level for the current movement. On moderate sales, No. 1 heavy melting steel is 25c. a ton higher at \$15, delivered mill. This price was paid yesterday and is the first significant feature in the market since the purchase by the leading consumer of about 20,000 tons of ordinary No. 1 and railroad heavy melting steel on Feb. 5. The yard

scrap brought \$14.75 and railroad or equivalent commanded \$15.25, delivered Pittsburgh district. The entire market unquestionably is absorbing a good deal of its strength from the continued severe weather in most districts and also from an attendant bullish sentiment among a majority of dealers. Even at present prices dealers are not able to cover quickly or profitably. No. 1 steel in the Valleys has sold at \$15.50, a 50c. a ton increase over the last transaction.

ICC to Hold Hearings On Surcharge Extension

WASHINGTON, Feb. 11.—The Interstate Commerce Commission today announced that it would hold hearings, beginning Mar. 4, on the petition of railroads to continue existing emergency freight charges. They will be in charge of Commissioner Aitchison.

Numerous protests have been filed by shippers against continuance of the charges and requests have been made of the commission to hold hearings at different points. It has not decided as yet whether they will be held exclusively in Washington or at other cities.

Eastern Malleable Buys Eberhard

THE Eastern Malleable Iron Co., Naugatuck, Conn., has purchased the plant, business and assets of the Eberhard Mfg. Co., Cleveland, which has operated a malleable iron foundry for 60 years. For a long time the company devoted its activities largely to the making of malleable castings for saddlery and vehicle hardware, but has extended its line during

Weekly Indications of Steel Activity

From THE IRON AGE

	Feb. 11, 1936	Feb. 4, 1936	Jan. 14, 1936	Feb. 12, 1935	Average Year to Date	
					1936	1935
Steel ingot operations—Per cent of capacity	53.0	52.0	51.0	53.5	51.0	50.8
	Week Ended				Year to Date	
	Feb. 11, 1936	Feb. 4, 1936	Jan. 14, 1936	Feb. 12, 1935	1936	1935
Fabricated structural steel awards.....	19,650	16,400	25,200	9,655	116,620	94,655
Fabricated plate awards.....	7,835	0	31,635	1,130	53,857	42,805
Sheet steel piling awards.....	2,760	0	0	0	6,360	4,300
Reinforcing bar awards.....	3,260	3,735	23,700	615	69,205	37,015

recent years. The Cleveland plant will be operated as the Eberhard Division of the Eastern Malleable Co., under the management of Arthur L. Wheeler, who has been at the head of the Eberhard company since 1908.

Reinforcing Steel

Awards 3260 Tons—New
Projects 18,200 Tons

AWARDS

Rome, N. Y., 100 tons, school, to Concrete Steel Co.

New York, 754 tons, State Procurement Division of Treasury, to W. Ames & Co.

Newark, 100 tons, Pennsylvania Railroad bridge, to J. Rich Steers, Inc.

Marcus Hook, Pa., 200 tons, office and laboratory for Sun Oil Co., to Taylor-Davis, Inc.

Chester, Pa., 100 tons, terminal building, to Bethlehem Steel Corp.

Schenley, Pa., 800 tons, building for Schenley Distillery Co., to Carnegie-Illinois Steel Corp., through Rust Engineering Co.

Oak Park, Ill., 600 tons, sewer project, to Joseph T. Ryerson & Son, Inc.

State of Illinois, 100 tons, bridge, to Calumet Steel Co.

North Chicago, Ill., 130 tons, filtration plant, to Calumet Steel Co.

Marshfield, Ore., 100 tons, post office, to Mercer Steel Co.

State of Wyoming, 220 tons, bridges in four counties, to unnamed bidders.

Tulare, Cal., 100 tons, city hall, to Kyle & Co.

Chico, Cal., 147 tons, high school, to Truscon Steel Co.

Sacramento, Cal., 100 tons, library at Sacramento Junior College, to Truscon Steel Co.

Pomona, Cal., 100 tons, school, to an unnamed bidder.

Famosa, Cal., 210 tons, State bridge over Pico Creek, to an unnamed bidder.

NEW REINFORCING BAR PROJECTS

Chicago, 1500 tons, outer drive development.

Chicago, 525 tons, contract No. 2 for Sanitary District.

Chicago, tonnage being estimated, contract N for Sanitary District.

Chicago, 100 tons, St. Gregory school.

Highland Park, Ill., 150 tons, sewage plant.

Milwaukee, 200 tons, addition to filter plant.

Wiota, Mont., 9550 tons, tunnels for Fort Peck dam; bids Kansas City Engineer office Feb. 21.

Salinas, Cal., 505 tons, County court house; bids Feb. 15.

Los Angeles, 1060 tons for Eagle pumping plant on Colorado River aqueduct; bids March 13.

State of Idaho, 153 tons, bridges in Shoshone and Power counties; bids Feb. 14.

Fremont County, Colo., 133 tons, State bridge between Salida and Canyon City; bids opened.

Pueblo County, Colo., 442 tons, State undercrossing between Pueblo and Ordway; bids opened.

Carson City, Nev., 100 tons, County library and court house; general contract awarded.

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Turned and Polished Shafting Turned and Ground Shafting

Sacramento, Cal., 500 tons, motor vehicle building, bids taken Feb. 11.

Salinas, Cal., 150 tons, ice plant; general contract awarded.

San Francisco, 212 tons, shop building at George Washington high school, new bids taken Feb. 7.

Sausalito, Cal., 200 tons, warehouse; bids opened.

Placerville, Cal., 129 tons, warehouse; bids opened.

Monterey County, Cal., 127 tons, State bridge south of San Ardo; bids Feb. 19.

Norwalk, Cal., 150 tons, ward building at State hospital; bids opened Feb. 4.

Camarillo, Cal., 100 tons, laundry building at State hospital; bids opened.

Pasadena, Cal., 200 tons, 30 and 36-in. pipe line, alternates on steel and cast iron pipe; bids opened.

Spokane, Wash., 200 tons, post office; bids under advisement.

Seattle, 200 tons, pattern shop for Continental Can Co., general contract awarded.

Los Angeles, 125 tons, wharf and transit shed at berth 155; bids Feb. 19.

Fort Peck, Mont., 1567 tons, emergency shafts for Fort Peck tunnel; bids opened Feb. 11 at Kansas City by United States Engineers.

Yakima, Wash., 125 tons placing, spillway at Kachess dam; bids Feb. 24.

Steel Production Again Rises in Chicago District



Operations Now At 60 Per Cent of Capacity As Railroad Buying and Pipe Line Projects Dominate Market

CHICAGO, Feb. 11.—Railroad and line pipe business offer a bright future and are now giving much needed support to this market by taking up slack in ingot production, which has been resulting from curtailed activity in automobile centers. The Denver & Rio Grande Western has ordered 10,000 tons of rails from the Colorado mill, and orders for railroad equipment are of almost daily occurrence.

The need for line pipe extends to both oil and gas, many present facilities having been extended to full capacity by the prevailing cold weather. Miscellaneous users have resumed demand after having lost some ground early in the month. Fabricators report the outlook to be better, particularly as to private projects. Bids will be taken in Chicago, March 3, on 15,000 tons of structural steel for the Outer Drive development. Producers of steel are inclining to-

ward the view that the drop in demand from automobile builders is leveling off and once again they are beginning to talk about a near future time when these users will take heavier tonnages. The upshot of the situation as a whole is that ingot production continues its climb, having gained one point to 60 per cent of capacity.

Pig Iron

February shipments are running ahead of the January average and specifications point to no lessening in the current rate. New buying is still on a fill-in basis, but it is probable that heavy tonnage commitments will start to flow near the end of the month. Automobile foundries are still holding back, but in all other directions the melt is either holding steady or showing a tendency to gain moderately. Coke shipments of foundry coke are experiencing a bulge such as has not been

known for several years and February promises to establish a post-depression record. Producers' stocks are fast being cut down and prices are strong.

Cast Iron Pipe

Cicero, Ill., has again thrown out bids and reasons given are numerous, but the most significant one apparently has to do with an election which is scheduled for April. Tonnages are missing, but small pick-up business is surprisingly good. Foundry books are well filled and with moderation of the weather shipments should bound upward because most contractors prefer to distribute pipe on frozen ground and so avoid the cost of trucking heavy loads during the spring thaw. Better weather should also bring out buying on a larger scale.

Reinforcing Bars

Efforts to bring steadying influences to bear on prices are only partly successful and cuts of as high as \$7 a ton still appear on some of the largest tonnages being offered. The practice is still in vogue of entering quotations at market figures and then the meat axe is used at the time of closing. The weather remains a deterrent to out-of-doors construction and consequently shipments are checked and truck drivers are growling because of so much enforced idleness. Jobs of unusual size will soon be in the market, these being the superstructures for the Randolph Street viaduct and other approaches to the outer bridge.

Rails

Active rail inquiries now pending include about 35,000 tons for the Rock Island and about 30,000 tons for the Milwaukee Road. Formal rail contracts are swelling sales reports and additional releases account for the major part of current increases in mill operations. Accessory business, though not large, is reaching mills in more uniform volume.

Plates

Pipe business is now joining railroad equipment as an additional prop for the plate market. A. O. Smith Corp. has booked 15,000 tons of 20-in. pipe for delivery to the Missouri River Valley and the Standard Oil Co. of Indiana is expected to buy 75 miles of 12-in. pipe. A steel water pipe at St. Louis will take 9000 tons. On the railroad side of the picture are orders for 23,000 tons of steel for car repairs, the announcement that the Milwaukee Road will build 1500 freight and some passenger cars in its own shops and the disclosure that the Wabash

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has been authorized to repair 1300 freight cars. News is expected daily as to the disposition of the 3000 refrigerators which are to be purchased by the Pacific Fruit Express.

Structural Material

New awards at about 9000 tons show marked improvement over the past few weeks. Also of importance is the fact that private work accounts for a large share of the tonnage. An addition to a soap plant at Hammond, Ind., calls for 3500 tons. Fresh inquiries for 7000 tons include two private undertakings which total 2300 tons. Fabricators report that the outlook is steadily improving.

Sheets

Demand from automobile centers continues to drop, but the miscellaneous trade is getting its second wind and it is now indicated that demand is soon to increase. Undoubtedly severe winter weather has been a major factor in slowing the movement of sheets. Output ranges from 75 to 80 per cent of capacity and prices remain steady in this area.

Bars

Many users that fall in the miscellaneous classification are specifying more heavily and there are indications that demand from automobile centers is leveling off. As yet, no sign that points to an upswing is indicated in bar tonnage which will go into automobiles. Agricultural implement manufacturers are holding all production gains and are optimistic as to the future.

Wire Products

Producers estimate that wire use for automobiles has dropped about 20 per cent since late 1935 and they believe that most of the shrinkage in demand from that source has now taken place. Bad weather accounts for slow trade with jobbers and also lack of interest on the part of railroads which are expected to become very active in the wire market during 1936. Utilities are showing more life and several attractive inquiries have been issued by them.

Scrap

Continued cold weather is playing havoc with the preparation and shipment of scrap. While there are no serious shortages at consuming points, there is strong reflection of the situation in the price structure. Examples of delivered railroad grade prices are \$14.75 a gross ton for heavy melting steel; \$15.30 for steel angle bars and \$18.10 for railroad mal-



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leable. Some brokers' sales of heavy melting steel at \$14.00 are not yet covered and all signs point to a still higher market with the one exception that about 30,000 tons of heavy melting has been taken direct from an accumulation north of Chicago.

European Steel Nations Protect Home Markets

DOMESTIC markets of the European countries that have important steel industries are protected by duties on imported steel products which average from two to five times higher than the duties levied on similar products imported into this country, according to data obtained by the American Iron and Steel Institute.

The existence of these duties helps to explain the fact that only 5 per cent of American exports of steel go to steel-producing nations of Europe.

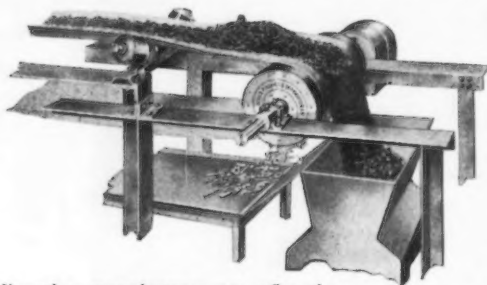
Italy's schedule of import duties on steel products is the highest of any major steel-producing country in Europe. On no major steel prod-

uct is the Italian import duty less than five times greater than the duty imposed by this country on imports of a similar product. The Italian tariff on plain wire, as calculated at the par of exchange, is nearly \$90 per gross ton, compared with the duty of only \$16.80 per ton which the United States Government levies on imports of plain wire into this country. An extreme example is the Italian duty on barbed wire, equivalent to \$96 per gross ton in American money. This product is admitted duty-free into the United States.

French import duties are next highest among European steel nations, in general ranging from 2 to 12 times as high as the corresponding American duties. Duties on steel imports into Germany, Sweden and Great Britain are likewise in practically all cases well in excess of those levied on steel entering the United States.

The only exception among the leading steel-producing nations of Europe is Belgium, which, by virtue of dependence on outside sources for many essential commodities, has only a nominal schedule of import duties.

IRON PROBLEMS SOLVED



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W. L. Jones, Jr., and M. C. Angloch Are Elected J. & L. Vice-Presidents

WILLIAM L. JONES, JR., and MILTON C. ANGLACH have been appointed vice-presidents of the Jones & Laughlin Steel Corp., Pittsburgh. Mr. Jones, whose father, at the time of his death, was president of the corporation, has been a director and member of the executive committee for many years. Mr. Jones was graduated from Princeton in 1915 and started in the company's steel plant at Aliquippa, Pa. His work was temporarily interrupted by the war, during which he served

in the United States Navy on transport duty between United States and Europe, being mustered out with the rank of ensign. Mr. Angloch was also elected a director and member of the executive committee and at the same time made president of Inter-state Iron Co., Interstate Steamship Co. and Jones & Laughlin Ore Co., all subsidiaries of the Jones & Laughlin Steel Corp. He retains the presidencies of the Vesta and Shannopin Coal companies and also the Blair Limestone Co., which he has



W. L. JONES, JR.



M. C. ANGLACH

headed since 1927. He started with the Jones & Laughlin, Ltd., in 1900 as a clerk at the South Side works. He was appointed purchasing agent in 1907 and successively held positions as assistant to the vice-president and general manager, vice-president and director of the Vesta and Shannopin Coal companies and president of those subsidiaries and of the Blair Limestone Co.

Suit Against Cleveland Steel Makers Dropped

WASHINGTON, Feb. 11. — Acting on a motion of the Department of Justice, United States District Judge Paul Jones, of the Northern District Court of Ohio, at Cleveland today, signed an order permitting withdrawal of the Government's suit against 10 steel corporations and seven individuals alleged to be interlocking directors in two or more of those corporations. The defendants named in the suit included the Youngstown Sheet & Tube Co., Inland Steel Co., Wheeling Steel Corp., Otis Steel Co., Delaware River Steel Co., Republic Steel Corp., Corigan, McKinney Steel Co., McKinney Steel Holding Co., Cleveland-Cliffs Iron Co., Cliffs Corp., William G. Mather, S. Livingston Mather, D. T. Croxton, Cyrus S. Eaton, George T. Bishop, William R. Burwell and Myron A. Wick.

In announcing withdrawal of the suit, the Department of Justice said that the primary relief sought had been attained and that it concluded further proceedings in the case will be unnecessary.

"After filing of the suit Feb. 6, 1935, several of the directors resigned or were not reelected as directors of defendant corporations, and as consequence those interlocking directorships ceased," said a Department of Justice statement. "The United States District Court concluded that such voluntary dissolution of the interlocking directorships was intended to be of a permanent character and this obviated the necessity of an extensive trial.

"In addition, since the filing of suit, McKinney Steel Holding Co., and Corigan, McKinney Steel Co., two of the defendants, have been dissolved. Two of the other defendant corporations, the Cliffs Corp., and the Cleveland-Cliffs Iron Co., had been made defendants primarily because of their common stock holdings in the two corporations which are now dissolved."

Prices of Finished Steel and Iron Products

BARS, PLATES, SHAPES

Iron and Steel Bars

Soft Steel	Base per Lb.
F.o.b. Pittsburgh	1.85c
F.o.b. Chicago	1.90c
F.o.b. Gary	1.90c
F.o.b. Duluth	2.00c
F.o.b. Detroit	2.00c
F.o.b. Cleveland	1.90c
F.o.b. Buffalo	1.95c
Del'd Philadelphia	2.10c
Del'd New York	2.20c
F.o.b. Birmingham	2.00c
F.o.b. cars dock Gulf ports	2.25c
F.o.b. cars Pacific ports	2.40c

Roll Steel

(For merchant trade)

F.o.b. Pittsburgh	1.70c
F.o.b. Chicago	1.75c
F.o.b. Gary	1.75c
F.o.b. Moline, Ill.	1.75c
F.o.b. Cleveland	1.75c
F.o.b. Buffalo	1.80c
F.o.b. Birmingham	1.85c
F.o.b. cars dock Gulf ports	2.10c
F.o.b. cars dock Pacific ports	2.25c

Billet Steel Reinforcing

(Straight lengths as quoted by distributors)	
F.o.b. Pittsburgh	2.05c
F.o.b. Chicago	2.10c
F.o.b. Gary	2.10c
Del'd Detroit	2.20c
F.o.b. Cleveland	2.10c
F.o.b. Youngstown	2.10c
F.o.b. Buffalo	2.10c
F.o.b. Birmingham	2.10c
F.o.b. cars dock Gulf ports	2.45c
F.o.b. cars dock Pacific ports	2.45c

Roll Steel Reinforcing

(Straight lengths as quoted by distributors)	
F.o.b. Pittsburgh	1.90c
F.o.b. Chicago	1.95c
F.o.b. Gary	1.95c
F.o.b. Cleveland	1.95c
F.o.b. Youngstown	1.95c
F.o.b. Buffalo	1.95c
F.o.b. Birmingham	1.95c
F.o.b. cars dock Gulf ports	2.30c
F.o.b. cars dock Pacific ports	2.30c

Iron

F.o.b. Chicago	1.80c
F.o.b. Pittsburgh (refined)	2.10c
Delivered New York	2.05c
Delivered Philadelphia	2.10c

Cold Finished Bars and Shafting*

	Base per Lb.
F.o.b. Pittsburgh	2.10c
F.o.b. Chicago	2.15c
F.o.b. Gary	2.15c
F.o.b. Cleveland	2.15c
F.o.b. Buffalo	2.20c
Del'd Detroit	2.30c
Del'd eastern Michigan	2.35c

* In quantities of 10,000 to 19,999 lb.

Fence and Sign Posts

Angle Line Posts

	Base per Net Ton
F.o.b. Pittsburgh	\$54.00
F.o.b. Chicago	54.00
F.o.b. Duluth	55.00
F.o.b. Cleveland	54.00
F.o.b. Birmingham	57.00
F.o.b. Houston, Orange, Beaumont, Galveston	63.00
F.o.b. Mobile	62.00
F.o.b. New Orleans, Lake Charles, Corpus Christi	63.00
F.o.b. cars dock Pacific ports	67.00

Plates

	Base per Lb.
F.o.b. Pittsburgh	1.80c
F.o.b. Chicago	1.85c
F.o.b. Gary	1.85c
Del'd Cleveland	1.95c
F.o.b. Coatesville	1.90c
F.o.b. Sparrows Point	1.90c
Del'd Philadelphia	1.95c
Del'd New York	2.00c
F.o.b. Birmingham	1.95c
F.o.b. cars dock Gulf ports	2.20c
F.o.b. cars dock Pacific ports	2.35c
Wrought iron plates, f.o.b. P'gh.	2.20c

Floor Plates

F.o.b. Pittsburgh	3.35c
F.o.b. Chicago	3.40c
F.o.b. Coatesville	3.40c
F.o.b. cars dock Gulf ports	3.75c
F.o.b. cars dock Pacific ports	3.90c

Structural Shapes

	Base per Lb.
F.o.b. Pittsburgh	1.80c
F.o.b. Chicago	1.85c
Del'd Cleveland	1.90c
F.o.b. Buffalo	1.90c
F.o.b. Bethlehem	1.90c
Del'd Philadelphia	2.01c
Del'd New York	2.0625c
F.o.b. Birmingham (standard)	1.95c
F.o.b. cars dock Gulf ports	2.20c
F.o.b. cars dock Pacific ports	2.35c

Steel Sheet Piling

	<i>Base per Lb.</i>
F.o.b. Pittsburgh	2.15c.
F.o.b. Chicago	2.25c.
F.o.b. Buffalo	2.25c.
F.o.b. cars dock Gulf ports.....	2.60c.
F.o.b. cars dock Pacific ports.....	2.60c.

SHEETS, STRIP, TIN PLATE

TERNE PLATE

Hot Rolled

Base per Lb.	
No. 10, f.o.b.	Pittsburgh .....1.85c
No. 10, f.o.b.	Gary .....1.95c
No. 10, del'd	Detroit .....2.05c
No. 10, del'd	Phila. ....2.16c
No. 10, f.o.b.	Birmingham .....2.00c
No. 10, f.o.b.	cars dock Pacific ports.2.40c

Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh	2.40c
No. 24, f.o.b. Gary	2.50c
No. 24, del'd Detroit	2.45c to 2.60c
No. 24, del'd Phila.	2.71c
No. 24, f.o.b. Birmingham	2.55c
No. 24, f.o.b. cars dock Pacific ports	3.05c
No. 24, wrought iron, Pittsburgh	4.30c

Heavy Cold-Rolled

No. 10 gage, f.o.b. Pittsburgh	2.50c
No. 10 gage, f.o.b. Gary	2.50c
No. 10 gage, f.o.b. Detroit	2.55c to 2.70c
No. 10 gage, del'd Phila.	2.81c
No. 10 gage, f.o.b. Birmingham	2.65c
No. 10 gage, f.o.b. cars dock Pacific ports	3.10c

Light Cold-Rolled

No. 20 gage, f.o.b. Pittsburgh	2.95c
No. 20 gage, f.o.b. Gary	3.05c
No. 20 gage, del'd Detroit	3.00c to 3.15c
No. 20 gage, del'd Phila.	3.26c
No. 20 gage, f.o.b. Birmingham	3.10c
No. 20 f.o.b. cars dock Pacific ports	3.50c

Galvanized Sheets

No. 24 gage, f.o.b. Pittsburgh	3.10c
No. 24, f.o.b. Gary	3.20c
No. 24, del'd Phila.	3.41c
No. 24, f.o.b. Birmingham	3.25c
No. 24, f.o.b. cars dock Pacific ports	3.70c
No. 24, wrought iron, Pittsburgh	4.95c

Long Ternes

No. 24, unassorted 8-lb. coating	3.40c
F.o.b. Pittsburgh	3.40c
F.o.b. Gary	3.50c
F.o.b. cars dock Pacific ports	4.10c

Vitreous Enameling Stock

No. 20, f.o.b. Pittsburgh	3.10c
No. 20, f.o.b. Gary	3.20c
No. 20, f.o.b. Birmingham	3.70c
No. 20, f.o.b. cars dock Pacific ports	3.70c
No. 10, f.o.b. Pittsburgh	2.50c
No. 10, f.o.b. Gary	2.60c
No. 10, f.o.b. Birmingham	3.10c
No. 10, f.o.b. cars dock Pacific ports	3.10c

Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	2.75c
No. 28, Gary	2.85c
No. 28, cars dock Pacific Coast	3.35c

Tin Plate

	Base per Box
Standard cokes, f.o.b. P'gh district mill	\$5.25
Standard cokes, f.o.b. Gary	5.35
Standard cokes, f.o.b. cars dock Pacific ports	5.90

Terne Plate

(F.o.b. Pittsburgh)

(Per Package, 20 x 28 in.)	
8-lb. coating I.C.	\$10.00
15-lb. coating I.C.	12.00
20-lb. coating I.C.	13.00
25-lb. coating I.C.	14.00
30-lb. coating I.C.	15.25
40-lb. coating I.C.	17.50

Hot-Rolled Hoops, Bands, Strips and Flats under 1/4 in.

	Base per Lb.
All widths up to 24 in., P'gh.....	1.85c
All widths up to 24 in., Chicago.....	1.95c
All widths up to 24 in., del'd De- troit	2.05c
All widths up to 24 in., Birming- ham	2.00c
Cooperage stock, Pittsburgh	1.95c
Cooperage stock, Chicago	2.05c

Cold-Rolled Strips

	<i>Base per Lb</i>
F.o.b. Pittsburgh	2.60c
F.o.b. Cleveland	2.60c
Del'd Chicago	2.80c
F.o.b. Worcester	2.80c

Fender Stock

No. 14, Pittsburgh or Cleveland	2.90c
No. 20, Worcester	3.30c
No. 20, Pittsburgh or Cleveland	3.30c
No. 20, Worcester	3.70c

WIRE PRODUCTS

(Carload lots, f.o.b. Pittsburgh and Cleveland.)

To Manufacturing Trade	Per Lb.
Bright wire	2.30c
Spring wire	2.90c

Chicago prices on products sold to the manufacturing trade are \$1 a ton above Pittsburgh or Cleveland. Worcester and Duluth prices are \$2 a ton above, Birmingham \$3 above, and Pacific Coast prices \$9 a ton above Pittsburgh or Cleveland.

To the Trade

	Base per Keg
Standard wire nails	\$2.40
Smooth coated nails	2.40

Base per 100 Lb.

Annealed fence wire	\$2.45
Galvanized fence wire	2.80
Polished staples	3.10
Galvanized staples	3.35
Barbed wire, galvanized	2.80
Twisted barless wire	2.80
Woven wire fence, base column	61.00
Single loop bale ties, base column	53.00

Chicago and Anderson, Ind., mill prices are \$1 a ton over Pittsburgh base (on all products except woven wire fence, for which the Chicago price is \$2 above Pittsburgh); Duluth, Minn., and Worcester, Mass., mill prices are \$2 a ton over Pittsburgh (except for woven wire fence at Duluth, which is \$3 over Pittsburgh); and Birmingham mill prices are \$3 a ton over Pittsburgh.

On wire nails, barbed wire, staples and fence wire, prices at Houston, Galveston and Corpus Christi, Tex., New Orleans, Lake Charles, La., and Mobile, Ala., are \$6 a ton over Pittsburgh, which Pacific Coast prices are \$8 over Pittsburgh. Exception: on fence wire Pacific Coast prices are \$11 a ton above Pittsburgh.

On staples and barbed wire, prices of \$6 a ton above Pittsburgh are also quoted at Beaumont and Orange, Tex.

Wire Hoops, Twisted or Welded

	<i>Off List</i>
F.o.b. Pittsburgh	45¢ off
F.o.b. Chicago	43½¢ off

STEEL AND WROUGHT IRON PIPE AND TUBING

Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

F.o.b. Pittsburgh only on wrought iron pipe.

Butt Weld

Steel			Wrought Iron		
Inches	Black	Galv.	Inches	Black	Galv.
1/4	51 1/2	29 1/2	1/4	51 1/2 + 138	29 1/2
3/8	53 1/2	35	3/8	53 1/2 + 138 + 21	35
1/2	55 1/2	47	1/2	55 1/2 + 138 + 21	47
3/4	57 1/2	52	3/4	57 1/2 + 138 + 21	52
1	59 1/2	55	1	59 1/2 + 138 + 21	55
1 1/4	61 1/2		1 1/4	61 1/2 + 138 + 21	
1 1/2	63 1/2		1 1/2	63 1/2 + 138 + 21	
1 3/4	65 1/2		1 3/4	65 1/2 + 138 + 21	
2	67 1/2		2	67 1/2 + 138 + 21	

Lap Weld

2	60	51	37	22 1/2
2 1/2	63	54	40	25
3 1/2	66	56	42	28 1/2
4 1/2	69	58	44	31 1/2
5 1/2	72	60	46	34 1/2
6 1/2	75	62	48	37 1/2
7 1/2	78	64	50	40 1/2
8 1/2	81	66	52	43 1/2
9 1/2	84	68	54	46 1/2
10 1/2	87	70	56	49 1/2
11 1/2	90	72	58	52 1/2

Butt Weld, extra strong, plain ends

1/4	48 1/2	33 1/2	1/4	48 1/2 + 13	45 1/2
3/8	51 1/2	36	3/8	51 1/2 + 13	48 1/2
1/2	54 1/2	38 1/2	1/2	54 1/2 + 13	51 1/2
3/4	57 1/2	41 1/2	3/4	57 1/2 + 13	54 1/2
1	60 1/2	44 1/2	1	60 1/2 + 13	57 1/2
1 1/4	63 1/2	47 1/2	1 1/4	63 1/2 + 13	60 1/2
1 1/2	66 1/2	50 1/2	1 1/2	66 1/2 + 13	63 1/2
1 3/4	69 1/2	53 1/2	1 3/4	69 1/2 + 13	66 1/2
2	72 1/2	56 1/2	2	72 1/2 + 13	69 1/2

Lap Weld, extra strong, plain ends

2	58	50	2	40	26
2 1/2	61	53	2 1/2	43	29
3 1/2	64	56	3 1/2	46	32
4 1/2	67	59	4 1/2	49	35
5 1/2	70	62	5 1/2	52	38
6 1/2	73	65	6 1/2	55	41
7 1/2	76	68	7 1/2	58	44
8 1/2	79	71	8 1/2	61	47
9 1/2	82	74	9 1/2	64	50
10 1/2	85	77	10 1/2	67	53
11 1/2	88	80	11 1/2	70	56

On butt-weld steel pipe two extra 5% discounts are allowed on sales to consumers while three 5's off apply on sales to jobbers. On less-than-carload shipments prices are determined by adding 20 and 25% and the carload freight rate to the base card. On structural steel pipe the base card is reduced 2 points and two 5's off are allowed to consumers and three 5's off to jobbers. Note—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2½ points less.

Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

Boiler Tubes

Seamless Steel Commercial Boiler Tubes and Locomotive Tubes

(Net base prices per 100 ft. f.o.b. Pittsburgh in carload lots)

	Cold Drawn	Hot Rolled
1 in. o.d.	13 B.W.G. \$ 8.60	\$ 7.82
1 1/4 in. o.d.	13 B.W.G. 10.19	9.26
1 1/2 in. o.d.	13 B.W.G. 11.26	10.23
1 3/4 in. o.d.	13 B.W.G. 12.81	11.84
2 in. o.d.	13 B.W.G. 14.35	13.04
2 1/4 in. o.d.	13 B.W.G. 16.00	14.54
2 1/2 in. o.d.	12 B.W.G. 17.61	16.01
2 3/4 in. o.d.	12 B.W.G. 19.29	17.54
3 in. o.d.	12 B.W.G. 20.45	18.59
3 1/4 in. o.d.	12 B.W.G. 21.45	19.50
3 1/2 in. o.d.	11 B.W.G. 21.98	20.37
3 3/4 in. o.d.	11 B.W.G. 22.99	21.62
4 in. o.d.	10 B.W.G. 33.60	30.54
4 1/4 in. o.d.	10 B.W.G. 41.08	37.35
5 in. o.d.	9 B.W.G. 51.56	46.87
6 in. o.d.	7 B.W.G. 79.15	71.90

Extras for less-carload quantities:

25,000 lb. or ft. to 39,999 lb. or ft.	5 %
12,000 lb. or ft. to 24,999 lb. or ft.	12 1/2 %

BOLTS, NUTS, RIVETS AND SET SCREWS

Bolts and Nuts
(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

Per Cent Off List	
Machine and carriage bolts:	
1/4 in. x 6 in. and smaller.....	70, 10 and 5
Larger than 1/4 in.....	70 and 10
Lag bolts, Nos. 1, 2, 3 and 7	
Plow bolts, Nos. 1, 2, 3 and 7	
heads.....	70 and 10
Hot-pressed nuts, blank or tapped,	
square.....	70 and 10
Hot-pressed nuts, blank or tapped, hexa-	
gon.....	70 and 10
C.p.e. and t. square or hex. nuts, blank	
or tapped.....	70 and 10
Semi-finished hexagon nuts, U.S.S. and	
S.A.E., all sizes to and incl.	
1 in. diameter.....	60, 20 and 15
Larger than 1 in. diameter.....	60, 20 and 15
Stove bolts in packages, Pittsburgh	
72 1/2 and 10	
Stove bolts in packages, Cleveland,	
72 1/2 and 10	
Stove bolts in bulk, Pittsburgh.....	82 1/2
Stove bolts in bulk, Chicago.....	82 1/2
Stove bolts in bulk, Cleveland.....	82 1/2
Tire bolts.....	65

Large Rivets
(1/2-in. and larger)

Base per 100 Lb.	
F.o.b. Pittsburgh or Cleveland.....	\$2.90
F.o.b. Chicago.....	3.00
F.o.b. Birmingham.....	3.05

Small Rivets
(7/16-in. and smaller)

Per Cent Off List	
F.o.b. Pittsburgh.....	70 and 5
F.o.b. Cleveland.....	70 and 5
F.o.b. Chicago and Rim's m.....	70 and 5

Cap and Set Screws
(Weight allowed up to but not exceeding
65c. per 100 lbs. on lots of 200 lb. or more)

Per Cent Off List	
Milled cap screws, 1 in. dia. and	
smaller.....	80, 10 and 10
Milled standard set screws, case hard-	
ened, 1 in. dia. and smaller.....	75
Milled headless set screws, cut thread	
1/4 in. and smaller.....	75
Unset hex. head cap screws, U.S.S. or	
S.A.E. thread, 1 in. and smaller.....	85
Unset set screws, cut and oval	
points.....	75 and 10
Milled studs.....	65 to 65 and 10

Alloy and Stainless Steel

Alloy Steel Ingots
F.o.b. Pittsburgh, Chicago, Canton,
Massillon, Buffalo, Bethlehem.

Unrecapped.....\$40 per gross ton

Alloy Steel Blooms, Billets
and Slabs

F.o.b. Pittsburgh, Chicago, Canton,
Massillon, Buffalo, Bethlehem.

Base price, \$49 a gross ton.

Alloy Steel Bars

Price del'd Detroit is \$52.

F.o.b. Pittsburgh, Chicago, Buffalo,
Bethlehem, Massillon or Canton.

Open-heart grade, base.....2.45c.

Delivered price at Detroit is.....2.60c.

S.A.E. Alloy

Differential

per 100 lb.

Numbers

2000 (1/4% Nickel).....0.25

2100 (2 1/4% Nickel).....0.55

2300 (3 1/2% Nickel).....1.50

2500 (5% Nickel).....2.25

3100 Nickel Chromium.....0.55

3200 Nickel Chromium.....1.35

3300 Nickel Chromium.....2.80

3400 Nickel Chromium.....3.20

4100 Chromium Molybdenum (0.15

to 0.25 Molybdenum).....0.50

4100 Chromium Molybdenum (0.25

to 0.40 Molybdenum).....0.70

4600 Nickel Molybdenum (0.20 to

0.30 Molybdenum (1.50 to

2.00 Nickel).....1.05

5100 Chromium Steel (0.60 to

0.90 Chromium).....0.35

5100 Chromium Steel (0.80 to

1.10 Chromium).....0.45

5100 Chromium Spring Steel.....base

6100 Chromium Vanadium Bar.....1.10c.

6100 Chromium Vanadium Spring

Steel.....0.70

Chromium Nickel Vanadium.....1.40

Carbon Vanadium.....0.85

These prices are for hot-rolled steel

bars. The differential for most grades in

electric furnace steel is 50c. higher. The

differential for cold-drawn bars 1/4c. per

lb. higher with separate extras. Blooms,

billets and slabs under 4x4 in. or equiv-

alent are sold on the bar base. Slabs with

a section area of 18 in. and 2 1/2 in. thick

or over take the billet base. Sections 4x4

in. to 10x10 in. or equivalent carry a

gross ton price, which is the net price for

bars for the same analysis. Larger sizes

carry extras.

Alloy Cold-Finished Bars

F.o.b. Pittsburgh, Chicago, Gary, Cleve-

land or Buffalo. 2.95c. base per lb.

STAINLESS STEEL No. 302

(17 to 19% Cr. 7 to 9% Ni. 0.08 to

0.20% C.)

(Base Prices f.o.b. Pittsburgh)

Per Lb.

Forging billets.....19.55c.

Bars.....23c.

Plates.....26c.

Structural shapes.....23c.

Sheets.....33c.

Hot-rolled strip.....30 1/2c.

Cold-rolled strip.....27c.

Drawn wire.....23c.

Raw and Semi-Finished Steel

Billets, Blooms and Slabs

F.o.b. Pittsburgh, Chicago, Gary, Cleve-

land, Youngstown, Buffalo, Birmingham.

Per Gross Ton

Rolling.....\$29.00

Forging quality.....35.00

Delivered Detroit

Rolling.....\$32.00

Forging.....38.00

Billets Only F.o.b. Duluth

Rolling.....\$31.00

Forging.....37.00

Sheet Bars

F.o.b. Pittsburgh, Chicago, Cleveland,

Youngstown, Buffalo, Canton, Sparrows

Point, Md.

Per Gross Ton

Open-hearth or Bessemer.....\$30.00

Skelp

F.o.b. Pittsburgh, Chicago, Youngstown,

Buffalo, Coatesville, Pa., Sparrows Point,

Md.

Per Lb.

Grooved.....1.80c.

Universal.....1.80c.

Sheared.....1.80c.

Wire Rods

(Common, base)

Per Gross Ton

F.o.b. Pittsburgh.....\$40.00

F.o.b. Cleveland.....40.00

F.o.b. Chicago.....41.00

F.o.b. Anderson, Ind.....41.00

F.o.b. Youngstown.....41.00

F.o.b. Worcester, Mass.....42.00

F.o.b. Birmingham.....43.00

F.o.b. San Francisco.....49.00

F.o.b. Galveston.....46.00

Pig Iron and Ferroalloys

PIG IRON

PRICES PER GROSS TON AT BASING POINTS

Basing Points	No. 2 Fdry.	Malleable	Basic	Bessemer
Everett, Mass.	\$20.50	\$21.00	\$20.00	\$21.50
Bethlehem, Pa.	20.50	21.00	20.00	21.50
Birdsboro, Pa.	20.50	21.00	20.00	21.50
Swedeland, Pa.	20.50	21.00	20.00	21.50
Steelton, Pa.	20.50	21.00	20.00	21.50
Sparrows Point, Md.	20.50	21.00	20.00	21.50
Neville Island, Pa.	19.50	19.50	19.00	20.00
Sharpville, Pa.	19.50	19.50	19.00	20.00
Youngstown	19.50	19.50	19.00	20.00
Buffalo	19.50	20.00	18.50	20.50
Erie, Pa.	19.50	20.00	19.00	20.50
Toledo, Ohio	19.50	19.50	19.00	20.00
Cleveland	19.50	19.50	19.00	20.00
Jackson, Ohio	21.25	21.25	20.75	21.25
Detroit	19.50	19.50	19.00	20.00
Hamilton, Ohio	19.50	19.50	19.00	20.00
Chicago	19.50	19.50	19.00	20.00
Granite City, Ill.	19.50	19.50	19.00	20.00
Duluth, Minn.	20.00	20.00	20.50	21.00
Birmingham	15.50	15.50	14.50	20.00
Provo, Utah	17.50	17.50	17.00	17.00

DELIVERED PRICES PER GROSS TON AT CONSUMING CENTERS

	No. 2 Fdry.	Malleable	Basic	Bessemer
Boston Switching District				
From Everett, Mass.	\$21.00	\$21.50	\$20.50	\$22.00
Brooklyn	22.9289	23.4289	22.9289	23.4289
From East, Pa.	21.9873	22.4873	21.9873	22.4873
Newark or Jersey City, N. J.	21.9873	22.4873	21.9873	22.4873
From East, Pa.	21.3132	21.8132	21.3132	21.8132
Philadelphia	21.3132	21.8132	21.3132	21.8132
From Eastern Pa.	20.5807	20.5807	20.0807	21.0807
Cincinnati	20.5807	20.5807	20.0807	21.0807
From Hamilton, Ohio	20.8482	20.8482	20.3482	21.3482
Canton, Ohio	21.64	21.64	21.64	21.64
From Cleveland and Youngstown	21.3832	21.3832	20.8832	21.3832
Columbus, Ohio	21.3832	21.3832	20.8832	21.3832
From Hamilton, Ohio	21.9289	21.9289	21.9289	21.9289
Mansfield, Ohio	21.9289	21.9289	21.9289	21.9289
From Cleveland and Toledo...	21.6935	21.6935	21.6935	21.6935
Indianapolis	21.6935	21.6935	21.6935	21.6935
From Hamilton, Ohio	20.57	20.57	20.57	20.57
South Bend, Ind.	21.94	21.94	21.94	21.94
From Chicago	21.3832	21.3832	21.3832	21.3832
Milwaukee	22.2178	22.2178	22.2178	22.2178
From Chicago	22.315	22.315	22.315	22.315
St. Paul	22.315	22.315	22.315	22.315
From Duluth	21.94	21.94	21.94	21.94
Davenport, Iowa	21.3832	21.3832	21.3832	21.3832
From Chicago	22.2178	22.2178	22.2178	22.2178
From Granite City	22.315	22.315	22.315	22.315
San Francisco, Los Angeles or	22.315	22.315	22.315	22.315
Seattle, From Provo	22.315	22.315	22.315	22.315

Delivered prices on Southern iron for shipment to Northern points are 38c. a gross ton below delivered prices from the nearest Northern basing points.

LOW PHOSPHORUS PIG IRON

Basing points: Birdsboro, Pa., Steel-

ton, Pa., and Standish, N. Y.....\$24.00

GRAY FORGE PIG IRON

Valley furnace.....\$19.00

Pittsburgh district furnace.....19.00

CHARCOAL PIG IRON

Lake Superior furnace.....\$22.00

Delivered Chicago.....25.2528

Delivered Buffalo.....25.595

CANADA

Pig Iron

Per gross ton:

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75.....	\$21.00
No. 2 fdy., sil. 1.75 to 2.25.....	20.50
Malleable.....	22.50

Delivered Montreal

No. 1 fdy., sil. 2.25 to 2.75.....	\$22.50
No. 2 fdy., sil. 1.75 to 2.25.....	22.00
Malleable.....	22.50
Basic.....	22.00

FERROALLOYS

Ferromanganese

F.o.b. New York, Philadelphia, Balti-

more, Mobile or New Orleans.

Per Gross Ton

Domestic, 80% (carload).....\$75.00

Spiegeleisen

Per Gross Ton Furnace

Domestic, 19 to 21%.....\$26.00

50-ton lots 3-mo. shipment.....24.00

F.o.b. New Orleans.....26.00

Electric Ferro-silicon

Per Gross Ton Delivered

50% (carloads).....\$77.50

50% (ton lots).....85.00

75% (carloads).....126.00

75% (ton lots).....136.00

Silvery Iron

F.o.b. Jackson, Ohio, Furnace

Per Gross Ton

6.00 to 6.50% \$22.75 12% \$29.75

6.51 to 7.00% 33.25 13% 30.75

7.01 to 7.50% 33.75 14% 32.25

7.51 to 8.00% 34.25 15% 33.75

8.01 to 8.50% 34.75 16% 35.25

8.51 to 9.00% 35.25 17

Iron and Steel Scrap

PITTSBURGH

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel	\$14.50 to \$15.00
No. 2 heavy melting steel	13.25 to 13.75
No. 2 railroad wrought	14.50 to 15.00
Scrap rails	15.00 to 15.50
Rolls, 3 ft. and under	14.50 to 15.00
Compressed sheet steel	13.25 to 13.75
Hand bundled sheet steel	13.00 to 13.50
Hvy. steel axle turnings	10.25 to 10.75
Machine shop turnings	10.25 to 10.75
Short shov. turnings	10.25 to 10.75
Short mixed borings and turnings	8.50 to 9.50
Cast iron borings	8.50 to 9.50
Cast iron car wheels	14.00 to 14.50
Heavy breakable cast	12.50 to 13.00
No. 1 cast	14.00 to 14.50
Rail. knuckles and couplers	16.75 to 17.25
Rail. coil and leaf springs	16.75 to 17.25
Roller steel wheels	16.75 to 17.25
Low phos. billet crops	17.00 to 17.50
Low phos. sheet bar crops	16.75 to 17.25
Low phos. punchings	16.25 to 16.75
Low phos. plate scrap	15.50 to 16.00
Steel car axles	15.25 to 15.75

CHICAGO

Delivered Chicago district consumers:	
Per Gross Ton	
Heavy melting steel	\$13.50 to \$14.00
Automobile hvy. melt steel	11.50 to 12.00
Shoveling steel	13.50 to 14.00
Hydraulic comp. sheets	12.75 to 13.25
Drop forge flashings	10.75 to 11.25
No. 1 busheling	12.50 to 13.00
Roller car wheels	15.00 to 15.50
Railroad leaf springs	15.00 to 15.50
Steel couplers and knuckles	14.50 to 15.00
Coil springs	15.50 to 16.00
Coil springs (elec. fur.)	13.25 to 13.75
Low phos. punchings	15.50 to 16.00
Low phos. plates, 12 in. and under	15.50 to 16.00
Cast iron borings	6.50 to 7.00
Short shoveling turnings	7.75 to 8.25
Machine shop turnings	6.50 to 7.00
Revolving rails	15.00 to 15.50
Steel rails, less than 3 ft.	15.00 to 15.50
Steel rails, less than 2 ft.	15.00 to 15.50
Angle bars, steel	15.25 to 15.75
Cast iron car wheels	13.50 to 14.00
Railroad malleable	16.50 to 17.00
Agricultural malleable	14.50 to 15.00

Per Net Ton	
Iron car axles	\$17.50 to \$18.00
Steel car axles	14.75 to 15.25
No. 1 railroad wrought	12.50 to 13.00
No. 2 railroad wrought	12.00 to 12.50
No. 2 busheling, old	8.50 to 9.00
Locomotive tires, smooth	12.00 to 12.50
Pipes and flues	7.00 to 7.50
No. 1 machinery	11.50 to 12.00
Clean automobile cast	11.50 to 12.00
No. 1 railroad cast	10.50 to 11.00
No. 1 agricultural cast	10.25 to 10.75
Store plate	7.50 to 8.00
Grate bars	8.50 to 9.00
Brake shoes	9.00 to 9.50

PHILADELPHIA

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel	\$12.50 to \$13.00
No. 2 heavy melting steel	11.25 to 11.75
Hydraulic compressed, new	12.00 to 12.50
Hydraulic compressed, old	9.50 to 10.00
Steel rails for rolling	14.50 to 15.00
Cast iron car wheels	14.50 to 15.00
Heavy breakable cast	12.50 to 13.00
No. 1 cast	13.00 to 13.50
Store plate (steel works)	10.00 to 10.50
Railroad malleable	16.00 to 16.50
Machine shop turnings	7.75 to 8.25
No. 1 blast furnace	6.25 to 6.75
Cast borings	6.00 to 6.50
Heavy axle turnings	10.25 to 10.75
No. 1 low phos. heavy	15.00 to 15.50
Couplers and knuckles	15.75 to 16.25
Roller steel wheels	15.75 to 16.25
Steel axles	16.50 to 17.00
Shafting	18.25 to 18.75
No. 1 railroad wrought	13.00 to 13.50
Spec. iron and steel pipe	10.00 to 10.50
Bundled sheets	11.00 to 11.50
No. 1 forge fire	11.50 to 12.00
Cast borings (chem.)	10.50 to 11.00

CINCINNATI

Dealers' buying prices per gross ton:	
No. 1 heavy melting steel	\$11.00 to \$11.50
No. 2 heavy melting steel	9.00 to 9.50
Scrap rails for melting	10.50 to 11.00
Long sheet clippings	7.00 to 7.50
Bundled sheets	8.00 to 8.50
Cast iron borings	6.00 to 6.50
Machine shop turnings	6.75 to 7.25
No. 1 busheling	10.25 to 10.75
No. 2 busheling	4.25 to 4.75
Rails for rolling	11.00 to 11.50
No. 1 locomotive tires	9.50 to 10.00
Cast iron car wheels	14.00 to 14.50
No. 1 machinery cast	10.50 to 11.00
No. 1 railroad cast	11.50 to 12.00
Burnt cast	7.75 to 8.25
Store plate	7.75 to 8.25
Agricultural malleable	9.75 to 10.25
Railroad malleable	11.50 to 12.00

CLEVELAND

Per gross ton delivered consumers' yards:	
No. 1 heavy melting steel	\$13.50 to \$14.00
No. 2 heavy melting steel	12.50 to 13.00
Compressed sheet steel	13.25 to 13.75
Light bundled sheet stampings	10.00 to 10.50
Drop forge flashings	12.50 to 13.00
Machine shop turnings	8.00 to 8.50
Short shoveling turnings	8.75 to 9.00
No. 2 busheling	12.50 to 13.00
Steel axle turnings	11.50 to 12.00
Low phos. billet crops	16.50 to 17.00
Cast iron borings	8.75 to 9.00
Mixed borings and short turnings	8.75 to 9.00
No. 2 busheling	8.75 to 9.00
Coil and leaf springs	14.50 to 15.00
Railroad grate bars	8.00 to 8.50
Store plate	9.00 to 9.50
Rails under 3 ft.	16.50 to 17.00
Rails for rolling	15.50 to 16.00
Railroad malleable	16.50 to 17.00
Cast iron car wheels	12.75 to 13.00

BUFFALO

Per gross ton, f.o.b. Buffalo consumers' plants:	
No. 1 heavy melting steel	\$12.25 to \$12.75
No. 2 heavy melting scrap	11.25 to 11.75
Scrap rails	12.25 to 12.75
New hydraulic comp. sheets	11.25 to 11.75
Old hydraulic comp. sheets	9.25 to 9.75
Drop forge flashings	11.25 to 11.75
No. 1 busheling	11.25 to 11.75
Hvy. steel axle turnings	10.50 to 11.00
Machine shop turnings	6.50 to 7.00
Knuckles and couplers	13.50 to 14.00
Coil and leaf springs	13.50 to 14.00
Roller steel wheels	13.50 to 14.00
Low phos. billet crops	14.50 to 15.00
Short shov. steel turnings	7.75 to 8.25
Short mixed borings and turnings	7.75 to 8.25
Cast iron borings	7.75 to 8.25
No. 2 busheling	7.00 to 7.50
Steel car axles	12.50 to 13.00
Iron axles	12.50 to 13.00
No. 1 machinery cast	12.50 to 13.00
No. 1 cupola cast	11.50 to 12.00
Store plate	10.00 to 10.50
Steel rails, 3 ft. and under	14.50 to 15.00
Cast iron car wheels	12.00 to 12.50
Railroad malleable	16.25 to 16.75
Chemical borings	9.00 to 9.50

BOSTON

Dealers' buying prices per gross ton:	
No. 1 heavy melting steel	\$10.50
No. 1 heavy melting steel	9.75
Scrap rails	10.50
Scrap rails	8.25 to 8.80
No. 2 steel	9.50
No. 2 steel	8.75
Breakable cast	7.25 to 7.50
*Machine shop turnings	5.50 to 5.75
*Machine shop turnings	3.40 to 3.75
Bundled skeleton, long	7.15 to 7.50
Shafting	13.00 to 13.25
Engine blocks, stripped	8.00 to 8.50
Cast iron borings, chemical	5.00 to 7.00
Cotton ties	6.00
*Store plate	7.00

Per gross ton delivered consumers' yards:	
Textile cast	\$9.00 to \$10.00
No. 1 machinery cast	10.00 to 10.50
Store plate	6.50 to 7.00

* Delivered local army base.

NEW YORK

Dealers' buying prices per gross ton:	
No. 1 heavy melting steel	\$9.00 to \$9.50
No. 2 heavy melting steel	7.80 to 8.50
Heavy breakable cast	7.00 to 7.50
No. 1 machinery cast	8.00 to 8.50
No. 2 cast	7.50 to 7.75
Store plate	7.75 to 7.90
Steel car axles	13.50 to 14.00
Shafting	13.50 to 13.75
No. 1 railroad wrought	8.50 to 9.00
No. 1 yard wrought long	7.50 to 8.00
Spec. iron and steel pipe	6.00 to 6.50
Forge fire	6.50 to 7.00
Rails for rolling	9.50 to 10.50
Short shoveling turnings	3.50 to 4.00
Machine shop turnings	4.00 to 4.50
Cast borings	3.00 to 3.50
No. 1 blast furnace	3.00 to 3.50
Cast borings (chemical)	10.00 to 11.00
Unprepared yard iron and steel	4.50 to 5.00

Per gross ton, delivered local foundries:	
No. 1 machinery cast	\$11.00
No. 1 hvy. cast (cupola size)	9.50
No. 2 cast	8.00

* Loading on barge.
* 50c. higher offered at nearby New Jersey points.

BIRMINGHAM

Per gross ton delivered consumers' yards:	
Heavy melting steel	\$9.50 to \$10.00
Scrap steel rails	11.00 to 11.50
Short shoveling turnings	7.00
Store plates	7.00
Steel axles	11.50 to 12.00
Iron axles	11.50
No. 1 railroad wrought	8.50
Rails for rolling	12.50
No. 1 cast	10.50 to 11.00
Tramcar wheels	10.00 to 10.50

ST. LOUIS

Dealers' buying prices per gross ton delivered consumers' works:	
Selected heavy steel	\$12.00 to \$12.50
No. 1 heavy melting	11.50 to 12.00
No. 2 heavy melting	10.25 to 10.75
No. 1 locomotive tires	11.00 to 11.50
Misc. stand-see. rails	12.50 to 13.00
Railroad springs	12.50 to 13.00
Bundled sheets	9.00 to 9.50
No. 2 railroad wrought	11.50 to 12.00
No. 1 busheling	7.50 to 8.00
Cast iron borings and shoveling turnings	4.50 to 5.00
Rails for rolling	13.25 to 13.75
Machine shop turnings	4.00 to 4.50
Heavy turnings	9.25 to 9.75
Steel car axles	12.50 to 13.00
Iron car axles	15.00 to 16.00
No. 1 railroad wrought	10.50 to 11.00
Steel rails less than 3 ft.	13.50 to 14.00
Steel angle bars	13.00 to 13.50
Cast iron car wheels	11.00 to 11.50
No. 1 machinery cast	11.25 to 11.50
Railroad malleable	14.25 to 14.75
No. 1 railroad cast	10.75 to 11.25
Store plate	7.50 to 8.00
Agricult. malleable	12.50 to 13.00

DETROIT

Dealers' buying prices per gross ton:	
No. 1 heavy melting steel	\$10.75 to \$11.25

ORES, FLUORSPAR, COKE, FUEL, REFRACTORIES

Lake Superior Ores

Delivered Lower Lake Ports

Per Gross Ton	
Old range, Bessemer, 51.50% iron	\$4.80
Old range, non-Bessemer, 51.50% iron	4.65
Mesabi, Bessemer 51.50% iron	4.65
Mesabi, non-Bessemer, 51.50% iron	4.50
High phosphorus, 51.50% iron	4.40

Foreign Ore

C.i.f. Philadelphia or Baltimore	
Per Unit	
Iron, low phos., copper free, 55 to 58% iron dry Spanish or Algeria	10.25c.
Iron, low phos., Swedish, average 68% iron	10.25c.
Iron, basic or foundry, Swedish, aver. 65% iron	9.50c.
Iron, basic or foundry, Russian, aver. 65% iron	Nominal
Manganese, Caucasian, washed 52% 48%	26c.
Manganese, African, Indian, 44-48%	25c.
Manganese, African, Indian, 49-51%	26c.
Manganese, Brazilian, 46 to 48% 51%	24c.

Per Net Ton Unit	
Tungsten, Chinese, wolframite, duty paid, delivered	\$16.00
Tungsten, domestic, scheelite delivered	16.00

Per Gross Ton	
Chrome, 45% Cr ₂ O ₃ , lamp, c.i.f. Atlantic Seaboard (African)	\$17.50
45 to 46% Cr ₂ O ₃ (Turkish)	\$10.50 to \$17.00
48% Cr ₂ O ₃ (African)	20.50
48% min. Cr ₂ O ₃ (Turkish)	19.25
Chrome concentrate, 50% and over Cr ₂ O ₃ , c.i.f. Atlantic Seaboard	22.00
52% Cr ₂ O ₃ (Turkish)	21.75
48 to 49% Cr ₂ O ₃ (Turkish)	19.25

Fluorspar

Per Net Ton	
Domestic, washed gravel, .85-5, f.o.b. Kentucky and Illinois mines for all rail shipment	\$17.50
No. 2 lump, .85-5, f.o.b. Kentucky and Illinois mines	18.00
Foreign, 85% calcium fluoride, not over 5% silicon, c.i.f. Atlantic ports, duty paid	20.00
Domestic No. 1 ground bulk, 95 to 98% calcium fluoride, not over 2% silicon, f.o.b. Illinois and Kentucky mines	30.00

COKE, COAL AND FUEL OIL

Coke	
Per Net Ton	
Furnace, f.o.b. Connellsville	
Prompt	\$3.65 to \$3.80
Foundry, f.o.b. Connellsville	
Prompt	4.25 to 5.75
Foundry, by-product, Chicago ovens, for delivery outside switching district	9.00
Foundry, by-product, delivery in Chicago switching district	9.75
England, delivered	11.50
Foundry, by-product, Newark or Jersey City, del'd	9.65
Foundry, by-product, Phila. land, delivered	9.75
Foundry, by-product, Cincinnati, del'd	9.50

No. 2 heavy melting steel	\$10.00 to \$10.50
Borings and turnings	6.50 to 7.00
Long turnings	6.50 to 7.00
No. 1 machinery cast	13.50 to 14.00
Automotive cast	13.50 to 14.00
Hydraulic comp. sheets	11.00 to 11.50
Store plate	8.75 to 9.25
New factory busheling	10.00 to 10.50
Old No. 2 busheling	5.50 to 6.00
Sheet clippings	8.50 to 9.00
Flashings	10.00 to 10.50
Low phos. plate scrap	11.00 to 11.50

CANADA

Dealers' buying prices per gross ton:	
Toronto Montreal	
Heavy melting steel	\$7.50 \$7.00
Rails, scrap	8.50 8.00
Machine shop turnings	4.00 4.00
Roller plate	7.00 6.00
Heavy axle turnings	4.50 4.00
Cast borings	5.00 4.50
Steel borings	4.00 4.00
Wrought pipe	4.00 4.00
Steel axles	8.50 9.00
Axles, wrought iron	9.00 9.50
No. 1 machinery cast	11.50 11.30
Store plate	7.50 7.00
Standard car wheels	11.00 10.50
Malleable	7.00 7.00
Shoveling steel	6.50 6.00
Bushings	6.00 5.50
Compressed sheets	6.50 6.00

Foundry, Birmingham	\$6.50
Foundry, by-product, St. Louis, f.o.b. ovens	8.00
Foundry, by-product, del'd St. Louis	9.00
Foundry, from Birmingham, f.o.b. cars docks, Pacific ports	14.75

Coal

Per Net Ton	
Mine run steam coal, f.o.b. W. Pa. mines	\$1.50 to \$1.75
Mine run coking coal, f.o.b. W. Pa. mines	1.90 to 2.10
Gas coal, 1/4-in. f.o.b. Pa. mines	2.00 to 2.25
Mine run gas coal, f.o.b. Pa. mines	1.80 to 2.00
Steam slack, f.o.b. W. Pa. mines	1.00 to 1.25
Gas slack, f.o.b. W. Pa. mines	1.20 to 1.45

Fuel Oil

Per Gal. f.o.b. Bayonne, N. J.	
No. 3 distillate	\$4.25c.
No. 4 industrial	3.87c.

Per Gal. f.o.b. Baltimore	
No. 3 distillate	4.25c.
No. 4 industrial	3.87c.

Per Gal. del'd Chicago	
No. 3 industrial fuel oil	5.00c.
No. 5 industrial fuel oil	3.77c.

Per Gal. f.o.b. Cleveland	
No. 3 distillate	5.50c.
No. 4 industrial	5.25c.
No. 5 industrial	4.50c.

REFRACTORIES

Fire Clay Brick

Per 1000 f.o.b. Works	
High-heat Intermediate Duty Brick	\$40.00
Pennsylvania	\$45.00
Maryland	45.00
New Jersey	50.00
Ohio	40.00
Kentucky	45.00
Missouri	45.00
Illinois	45.00
Ground fire clay, per ton	7.00

Silica Brick

Per 1000 f.o.b. Works	
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Warehouse Prices for Steel Products

PITTSBURGH

	Base per Lb.
Plates	3.15c.
Structural shapes	3.15c.
Soft steel bars and small shapes	2.95c.
Reinforcing steel bars	2.90c.
Cold-finished and screw stock:	
Rounds and hexagons	3.35c.
Squares and flats	3.35c.
Hoops and bands under 3/4 in.	3.20c.
Hot-rolled annealed sheets (No. 24)	3.30c.
25 or more bundles	3.30c.
Galv. sheets (No. 24), 25 or more	3.95c.
Hot-rolled sheets (No. 10)	2.95c.
Galv. corrug. sheets (No. 28), per	
square (more than 3750 lb.)	\$3.69
Spikes, large	2.90c.
Track bolts, all sizes, per 100 count,	
65 per cent off list.	
Machine bolts, 100 count.	65 per cent off list.
Carriage bolts, 100 count.	65 per cent off list.
Nuts, all styles, 100 count.	65 per cent off list.
Large rivets, base per 100 lb.	\$3.50
Wire, black, soft ann'l'd, base per	
100 lb.	\$2.70
Wire, galv. soft, base per 100 lb.	\$2.925
Common wire nails, per keg.	\$2.834
Cement coated nails, per keg.	\$2.834

On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applies to orders of 400 to 9999 lb.
*Delivered in Pittsburgh switching district.

CHICAGO

	Base per Lb.
Plates and structural shapes	3.20c.
Soft steel bars, rounds	3.00c.
Soft steel bars, squares and hexagons	3.15c.
Cold-fin. steel bars:	
Rounds and hexagons	3.50c.
Flats and squares	3.50c.
Hot-rolled strip	3.30c.
Hot-rolled annealed sheets (No. 24)	3.35c.
Galv. sheets (No. 24)	4.55c.
Hot-rolled sheets (No. 10)	3.05c.
Spikes (keg lots)	3.50c.
Track bolts (keg lots)	4.65c.
Rivets, structural (keg lots)	3.65c.
Rivets, boiler (keg lots)	3.75c.
Machine bolts	Per Cent Off List
Carriage bolts	*70
Lag screws	*70
Hot-pressed nuts, sq. tap or	
Hot-pressed nuts, sq. tap or blank...	*70
Hot-pressed nuts, hex. tap or	
Hot-pressed nuts, hex. tap or blank...	*70
Hex. head cap screws	*87 1/2
Cut point set screws	*75 and 10
Flat head bright wood screws	70
Spring cotters	55
Store bolts in full packages	70
Rd. hd. tank rivets, 7/16 in. and	
smaller	57 1/2
Wrought washers	\$4.50 off list
Black ann'l'd wire per 100 lb.	\$5.85
Com. wire nails, base per keg	2.95¢
Cement c't'd nails, base per keg	2.95¢

On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 9999 lb. All prices are f.o.b. consumers' plants within the Chicago switching district.

*These are quotations delivered to city trade for quantities of 100 lb. or more. For lots of less than 100 lb., the quotation is 65 per cent off. Discounts applying to country trade are 70 per cent off, f.o.b. Chicago, with full or partial freight allowed up to 50c. per 100 lb.
†Prices for city and suburbs only.

NEW YORK

	Base per Lb.
Plates, 1/4 in. and heavier	3.40c.
Structural shapes	3.37c.
Soft steel bars, rounds	3.31c.
Iron bars	3.31c.
Iron bars, swed. charcoal, 6.75c. to 7.00c.	
Cold-fin. shafting and screw stock:	
Rounds and hexagons	3.81c.
Flats and squares	3.81c.
Cold-rolled: strip, soft and quarter	
hard	3.36c.
Hoops	3.56c.
Bands	3.56c.
Hot-rolled sheets (No. 10)	3.31c.
Hot-rolled ann'l'd sheets (No. 24)*	3.89c.
Galvanized sheets (No. 24)*	5.25c.
Long term sheets (No. 24)*	11.00c.
Standard tool steel	3.40c.
Wire, black annealed (No. 10)	3.40c.
Wire, galv. (No. 10)	3.75c.
Tire steel, 1 x 1/4 in. and larger	3.75c.
Open hearth spring steel, 4.00c. to 10.00c.	
Common wire nails, base, per keg.	\$3.21
Per Cent Off List	
Machine bolts, square head and nut:	
All diam.	.65 and 10
Carriage bolts, cut thread:	
All diameters	.65 and 10

	Per 100 Ft.
Boiler tubes:	
Lap welded, 2-in.	\$18.05
Seamless welded, 2-in.	19.24
Charcoal iron, 2-in.	24.94
Charcoal iron, 4-in.	63.65

*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

ST. LOUIS

	Base per Lb.
Plates and struc. shapes	3.45c.
Bars, soft steel (rounds and flats)	3.25c.
Bars, soft steel (squares, hexagons, ovals, half ovals and half rounds)	3.40c.
Cold-fin. rounds, shafting, screw	
stock	3.75c.
Hot-rolled annealed sheets (No. 24)	4.10c.
Galv. sheets (No. 24)	4.65c.
Hot-rolled sheets (No. 10)	3.30c.
Black corrug. sheets (No. 24)	4.10c.
*Galv. corrug. sheets	4.65c.
Structural rivets	4.00c.
Boiler rivets	4.10c.
Per Cent Off List	
Tank rivets, 7/16 in. and smaller	55
Machine and carriage bolts, lag screws,	
fitting up bolts, bolt ends, plow bolts,	
hot-pressed nuts, square and hexagon,	
tapped or blank, semi-finished nuts:	
All quantities	70

*No. 26 and lighter take special prices.

PHILADELPHIA

	Base per Lb.
*Plates, 1/4-in. and heavier	2.98c.
*Structural shapes	2.98c.
*Soft steel bars, small shapes, iron	
bars (except bands)	3.03c.
†Reinforc. steel bars, sq. twisted	2.96c.
Cold-finished steel bars	3.76c.
*Steel hoops	3.43c.
*Steel bands, No. 12 and 3/16 in.	
incl.	3.18c.
Spring steel	5.00c.
†Hot-rolled anneal. sheets (No. 24)	3.65c.
†Galvanized sheets (No. 24)	4.40c.
†Hot-rolled annealed sheets (No.	
10)	3.08c.
Diam. pat. floor plates, 1/4 in.	4.95c.
Swedish iron bars	6.25c.

These prices are subject to quantity differentials except on reinforcing and Swedish iron bars.
*Base prices subject to deduction on orders aggregating 4000 lb. or over.
†For 50 bundles or over.
‡For less than 2000 lb.

CLEVELAND

	Base per Lb.
Plates and struc. shapes	3.31c.
Soft steel bars	3.10c.
Reinforc. steel bars	3.10c.
†Cold-finished steel bars	3.50c.
†Flat-rolled steel under 1/4 in.	3.36c.
Cold-finished strip	13.00c.
Hot-rolled annealed sheets (No. 24)	3.91c.
Galvanized sheets (No. 24)	4.61c.
Hot-rolled sheets (No. 10)	3.11c.
Hot-rolled 3/16 in. 24 to 48 in. wide	
sheets	3.56c.
*Black ann'l'd wire, per 100 lb.	\$2.75
*No. 9 galv. wire, per 100 lb.	3.10
*Com. wire nails, base per keg	2.70

†Outside delivery 10c. less.
*For 5000 lb. or less.

CINCINNATI

	Base per Lb.
Plates and struc. shapes	3.42c.
Bars, rounds, flats and angles	3.22c.
Other shapes	3.37c.
Ball steel reinfo. bars	3.25c.
Hoops and bands, 3/16 in. and	
lighter	3.47c.
Cold-finished bars	3.72c.
Hot-rolled annealed sheets (No. 24)	4.02c.
Galv. sheets (No. 24)	4.72c.
Hot-rolled sheets (No. 10)	3.22c.
Structural rivets	4.35c.
Small rivets	55 per cent off list
No. 9 ann'l'd wire, per 100 lb. (1000	
lb. or over)	\$2.83
Com. wire nails, base per keg:	
Any quantity less than carload	3.04
Cement c't'd nails, base 100-lb. keg	3.50
Chain, lin. per 100 lb.	8.35
Seamless steel boiler tubes, 2-in.	\$20.37
4-in.	48.14
Lap-welded steel boiler tubes, 2-in.	19.38
4-in.	45.32

BUFFALO

	Base per Lb.
Plates	3.38c.
Struc. shapes	3.25c.
Soft steel bars	3.05c.
Reinforcing bars	2.60c.

Cold-fin. flats and sq.	3.55c.
Rounds and hex.	3.55c.
Cold-rolled strip steel	3.19c.
Hot-rolled annealed sheets (No. 24)	4.06c.
Heavy hot-rolled sheets (3/16 in.,	
24 to 48 in. wide)	3.63c.
Galv. sheets (No. 24)	4.70c.
Bands	3.43c.
Hoops	3.43c.
Heavy hot-rolled sheets	3.18c.
Com. wire nails, base per keg.	\$3.35
Black wire, base per 100 lb. (2500-	
lb. lots or under)	3.55
(Over 2500 lb.)	3.45

BOSTON

	Base per Lb.
Beams, channels, angles, tees, zees	3.54c.
H beams and shapes	3.54c.
Plates—Sheered, tank and univ. mill.	
1/4 in. thick and heavier	3.56c.
Floor plates, diamond pattern	3.56c.
Bar and bar shapes (mild steel)	3.45c.
Bands 3/16 in. thick and	
No. 12 ga. incl.	3.65c. to 4.65c.
Half rounds, half ovals, ovals and	
bevels	4.70c.
Tire steel	4.70c.
Cold-rolled strip steel	3.245c.
Cold-finished rounds, squares and	
hexagons	3.90c.
Cold-finished flats	3.90c.
Blue annealed sheets, No. 10 ga.	3.65c.
One pass cold-rolled sheets No. 24	
ga.	4.20c.
Galvanized steel sheets, No. 24 ga.	4.40c.
Lead coated sheets, No. 24 ga.	5.85c.

Prices delivered by truck in metropolitan Boston, subject to quantity differentials.

DETROIT

	Base per Lb.
Soft steel bars	3.09c.
Structural shapes	3.42c.
Plates	3.42c.
Floor plates	5.17c.
Hot-rolled annealed sheets (No. 24)	3.94c.
Hot-rolled sheets (No. 10)	3.14c.
Galvanized sheets (No. 24)**	4.72c.
Bands	3.39c.
Hoops	3.39c.
†Cold-finished bars	3.61c.
Cold-rolled strip	3.18c.
Hot-rolled alloy steel (S.A.E. 3100	
Series)	5.29c.*
Bolts and nuts, in cases,	
70 and 10 per cent off list	
Broken cases	70 per cent off

Prices delivered by truck in metropolitan Detroit, subject to quantity differentials.
*Price applies to 1,000 lb. and over.
†With reduction in chemical extras.
**0.25c. off list for 10 to 25 bundles; 0.50c. for 25 bundles and over, Detroit delivery only.

MILWAUKEE

	Base per Lb.
Plates and structural shapes	3.31c.
Soft steel bars, rounds up to 8 in.	
flats and fillet angles	3.11c.
Soft steel bars, squares and hexagons	3.26c.
Hot-rolled strip	3.41c.
Hot-rolled sheets (No. 10)	3.16c.
Hot-rolled annealed sheets (No. 24)	3.96c.
Galvanized sheets (No. 20)	4.66c.
Cold-finished steel bars	3.61c.
Cold-rolled strip	3.33c.
Structural rivets (keg lots)	3.86c.
Roller rivets, cone head (keg lots)	3.96c.
Track spikes (keg lots)	3.71c.
Track bolts (keg lots)	4.86c.
Black annealed wire	3.15c.
Com. wire nails	2.85c.
Cement coated nails	2.85c.
Per Cent Off List	
Machine bolts	70 and 10
Carriage bolts	70 and 10
Hot-pressed nuts, sq. and hex. tanned	
or blank (keg lots)	70 and 10

Prices given above are delivered Milwaukee.
On plates, shapes, bars, hot-rolled strip and heavy hot-rolled sheets, the base applies on orders of 400 to 9999 lb. On galvanized and No. 24 hot-rolled annealed sheets the prices given apply on orders of 400 to 1500 lb. On cold-finished bars the prices are for orders of 1000 lb. or more of a size.

ST. PAUL

	Base per Lb.
Mild steel bars, rounds	3.25c.
Structural shapes	3.45c.
Plates	3.45c.
Cold-finished bars	4.02c.
Bands and hoops	3.55c.
Hot-rolled annealed sheets, No. 24	3.90c.
Galvanized sheets	5.50c.
Cold-rolled sheets, No. 20	4.95c.

On mild steel bars, shapes, plates and hoops and bands the base applies on 400 to 14,999 lb. On hot-rolled sheets, galvanized sheets and cold-rolled sheets base applies on 15,000 lb. and over. Base on cold-finished bars is 1000 lb. and over of a size.

BALTIMORE

	Base per Lb.
*Mild steel bars	3.00c.

*Reinforcing bars	2.85c.
*Structural shapes	3.00c.
†Plates	3.00c.
†Hot-rolled sheets, No. 10	3.10c.
†Hot-rolled annealed sheets, No. 24	3.60c.
†Galvanized sheets, No. 24	4.30c.
*Bands	3.20c.
*Hoops	3.45c.
*Cold-rolled rounds	3.58c.
*Cold-rolled squares, hex. and flats	3.58c.
Rivets	4.40c.
Bolts and nuts, per cent off list.	60 and 10

*Quantity extras per size apply. †Quantity extras per thickness apply. Hot-rolled quantity extras are: 2000 lb. and over, base: 1500 lb. to 1999 lb. add 15c. per 100 lb.; 1000 lb. to 1499 lb. add 30c.; 0 to 999 lb. add 50c.
‡25 bundles and over, base. For 1 to 9 bundles add 50c. per 100 lb.; for 10 to 24 bundles add 25c.

\$Base for 1000 lb. and over. For 500 to 999 lb. add 25c. per 100 lb.; for 300 to 499 lb. add \$1.00; for 0 to 299 lb. add \$1.75; for combined order under 100 lb. add \$3.00.

**For orders 4000 lb. to 9999 lb. Add 15c. per 100 lb. for orders 2000 to 3999 lb.; add 65c. for orders less than 2000 lb.

CHATTANOOGA

	Base per Lb.
Mild steel bars	3.35c.
Iron bars	3.35c.
Reinforcing bars	3.35c.
Structural shapes	3.56c.
Plates	3.56c.
Hot-rolled sheets, No. 10	3.38c.
Hot-rolled annealed sheets, No. 24	4.16c.
Galvanized sheets, No. 24	4.88c.
Steel bands	3.61c.
Cold-finished bars	3.98c.

MEMPHIS

	Base per Lb.
Mild steel bars	3.47c.
Shapes, bar size	3.47c.
Iron bars	3.47c.
Structural shapes	3.67c.
Plates	3.67c.
Hot-rolled sheets, No. 10	3.47c.
Hot-rolled annealed sheets, No. 24	4.27c.
Galvanized sheets, No. 24	4.98c.
Steel bands	3.72c.
Cold-drawn rounds	3.89c.
Cold-drawn flats, squares, hexagons	5.89c.
Structural rivets	4.25c.
Bolts and nuts, per cent off list	65
Small rivets, per cent off list	50

NEW ORLEANS

	Base per Lb.
Mild steel bars	3.35c.
Reinforcing bars	3.56c.
Structural shapes	3.56c.
Plates	3.56c.
Hot-rolled sheets, No. 10	3.55c.
Hot-rolled annealed sheets, No. 24	4.50c.
Galvanized sheets, No. 24	4.95c.
Steel bands	3.95c.
Cold-finished steel bars	4.30c.
Structural rivets	4.25c.
Boiler rivets	4.25c.
Common wire nails, base per keg	\$2.95
Bolts and nuts, per cent off list	70

PACIFIC COAST

	Base per Lb.
San Francisco	
Los Angeles	
Seattle	
Plates, tank and	
U. M.	3.25c. 3.60c. 3.55c.
Shapes, standard	3.25c. 3.60c. 3.55c.
Soft steel bars	3.25c. 3.60c. 3.70c.
Reinforcing bars	
f.o.b. cars dock	
Pacific ports	2.45c. 2.45c. 2.45c.
Hot-rolled annealed sheets (No. 24)	4.00c. 4.35c. 4.40c.
Hot-rolled sheets	
(No. 10)	3.35c. 3.70c. 3.75c.
Galv. sheets (No. 24)	4.50c. 4.95c. 5.00c.
Cold finished steel	
Rounds	5.80c. 5.85c. 6.00c.
Squares and hexagons	7.05c. 7.10c. 7.25c.
Flats	7.55c. 7.60c. 8.25c.
Common wire nails	
—base per keg	
less carload	\$3.20. \$3.20. \$3.20

All items subject to differentials for quantity.

TOOL STEEL

Prices are same for warehouse distribution at all points on or East of Mississippi River. West of Mississippi quotations are 1c. a lb. higher.

	Base per Lb.
High speed	57c.
High carbon chrome	37c.
Oil hardening	22c.
Extra	17c.
Regular	14c.

Three Blast Furnaces Are Started in Cleveland Area



Open-hearth Schedules Maintained As Automotive Demand Shows Signs of Improvement

CLEVELAND, Feb. 11.—Miscellaneous demand for small lots of steel continues good and offsets to a considerable extent the absence of new specifications from the motor car industry. Ingot output in the Cleveland-Lorain district is unchanged this week at 64 per cent of capacity. Republic Steel Corp. put on two open-hearth furnaces in Cleveland, but the other two steel plants each took off a furnace hearth.

Republic also blew in a blast furnace that was down for relining and now is operating all four of its Cleveland stacks. The National Tube Co. started another blast furnace in Lorain. Carnegie-Illinois Steel Corp. will blow in within a day or two one of the two Central furnaces at Cleveland which it has repaired, and it is now a factor in the manufacture of merchant pig iron in this market.

Considerable pickup in the demand for steel from motor car manufacturers is looked for towards the end of the month, when the automobile builders are expected to cover for their increased production schedules that are to become effective in March. Parts makers in this territory that supply Ford are maintaining good schedules and some of the makers of Chrysler parts are reported to have stepped up production.

Activity in the construction field is light. Public work is being retarded by cold weather. The Wheeling & Lake Erie Railroad has placed 1200 tons of steel piling for a dock in Huron, Ohio.

With irregularities in sheets and strip steel and weakness in some districts on other products, close attention is being given to the price situation, particularly because it will soon be time to name second-quarter prices. Sheet and strip makers will make determined efforts to eliminate the concessions that have been made recently, mostly to the automotive industry. Automotive consumers have attempted without success to place

sheet orders for deliveries through the remainder of the first half at present prices. Some consumers also are trying to buy steel bars for the second quarter to protect themselves against a possible advance. Holding to new prices on semi-finished steel will be helpful in establishing finished steel prices on a firmer basis. Some of the mills are attempting to straighten out the tangled price situation on reinforcing bars by quoting directly and thus eliminating the distributors, on some of whom is placed the responsibility for breaking down prices to at least \$5 a ton below the regular quotation.

Pig Iron

The market shows little life. There is no forward buying and sales are limited to car lots. Manufacturers of heating equipment and agricultural implements are taking

more iron than recently, but automotive foundries are operating at greatly reduced schedules this month and have cut down their shipments accordingly. With a scarcity of good foundry scrap and higher scrap prices a trend is reported among some foundries to use more iron and less scrap in their cupolas, thus reversing the trend of the past few years.

Sheets

New demand from the automotive industry continues slack but business from other sources is quite satisfactory. Some new tonnage in sizable lots was placed by washing machine manufacturers during the week and stove makers continue busy and are ordering quite freely. Some shipments that were held up by the motor car industry have not yet been released, although new releases have come from some parts makers who are increasing their schedules. Enameling and electrical sheets are active. Price concessions granted the automotive industry on hot- and cold-rolled sheets have in some cases been extended to consumers in other fields. Some irregularity is reported on galvanized sheet prices in the South.

Strip Steel

New demand from the motor car industry is slack. Parts makers continue to take shipments against recent orders, but generally are

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Plain and Ornamental Perforations in a great variety of sizes and styles, made in any metal. Excellence of product and low prices.

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PERFORATING CO.

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THE AMERICAN TOOL WORKS, of Cincinnati, Ohio



are internationally known for their high duty and production lathes, radial drills, and shapers. Ampco Metal, with its excellent characteristics of wear-resistance, strength, and toughness, plays an important part in the maintenance of rigidity and accuracy in these products. Shifters, worm wheels, feed nuts, sleeve gears, bushings, and miscellaneous parts are standard on "American" equipment.



Catalog of Ampco products on request.

AMPco METAL, Inc.
MILWAUKEE, WISCONSIN

operating at reduced schedules. Miscellaneous demand is dull.

Iron Ore

Ore is moving in fair volume from docks. Dock shipments from Lake Erie ports during January were 124,135 tons as compared with 133,768 tons during the same month last year. The dock balance Feb. 1 was 4,969,841 tons as against 5,022,889 tons on the same date a year ago.

Fluorspar

Domestic fluorspar for all-rail shipment has advanced \$1.50 per ton to \$17.50, the price that has prevailed for barge shipment. Barge shipments have been entirely suspended because of the freezing of the Ohio River, and for that reason no price is being quoted at present for shipment by barge. Some carlot sales have been made at the advance.

Bars, Plates and Shapes

Bars are in fair demand in miscellaneous orders, which are nearly all for car lots. Business from forge shops and other makers of automobile parts continues light. Demand has improved from builders of road machinery. Makers of farm tools are ordering freely. Alloy steel bars are very quiet. In the construction field there is little new inquiry. A bridge in Cincinnati taking 435 tons has been placed, as well as 2016 tons additional for the Fisher Body Plant in Grand Rapids, Mich. Locally the only sizable job pending is a station for the Ohio Bell Telephone Co. requiring 400 tons. Contractors declined to bid on a bridge in Lorain County, requiring 1200 tons, being unable to come within the estimate with the man-hours called for by the State

Highway Department, which they claimed were far more than needed to erect the job. Cold weather is restricting new demand for reinforcing bars for public work.

Scrap

With the continued cold weather which has curtailed the handling of scrap, the scarcity has not been relieved. Prices of steel-making scrap have further advanced 25c. to 50c. a ton and the market is very firm. Mills are crowding for deliveries and some brokers are reported to be 30 days behind on shipments because of their inability to buy scrap. While mills are not short of scrap, they do not wish to cut too deeply into their stock piles. For Cleveland delivery brokers are now paying \$14 for No. 1 heavy melting steel. In the Youngstown district \$15 is being paid for the same grade, or the price the purchaser paid about two weeks ago.

Buffalo Steel Output Is Well Sustained

BUFFALO, Feb. 11—Operations of Buffalo mills this week are about the same as last. Bethlehem's Lackawanna plant has nine open-hearths active; Republic Steel Corp., two; and Wickwire-Spencer, one, while Seneca sheet division of Bethlehem is running about 75 per cent.

Bids will be taken today on a State highway grade crossing elimination job at Jamestown, N.Y., to require 600 tons of fabricated structural steel and at Elmira, N.Y., for a similar job requiring 300 tons of structural steel.

The pig iron market is quiet,

with shipments mediocre. Makers look for some real buying within the next three or four weeks. Some foundries are going along very well with the general jobbing shop looming up as the busiest. Some of the foundries allied with the automotive industry are also beginning to pick up. The heating industry foundries show little activity.

The scrap market is firm, with few sales. An unusual transaction was the sale of 250 tons of railroad malleable at \$16, Batavia, N.Y. Unable to cover at this price, the dealer was compelled to let the buyer proceed into the open market with the result that other dealers received as high as \$18.50, Batavia, for this grade. This transaction is an evidence of what might happen on No. 1 and No. 2 steel in the event it was needed in a hurry. The highest present offering price is \$12 which is out of line compared to the usual strength of the Buffalo market as compared with outside markets. So depressed is the Buffalo price that it is now actually possible to sell Youngstown consumers and realize as much as the present offering price in the district. Dealers believe the price is bound to rise.

Detroit Scrap Market Continues Very Strong

DETROIT, Feb. 11.—The scrap market continues very strong. Unreasonably cold and severe weather has hampered movement of all classifications of scrap and reduced automotive operations have produced a scarcity, making delivery at any price difficult. A concurrent rise in steel mill operations points to continued strength in scrap.

Cast Iron Pipe

Keokuk, Iowa, closes bids Feb. 24 for pipe for water system; also for elevated steel tank and tower and other waterworks installation. Brown Engineering Co., Ottumwa, Iowa, is consulting engineer.

Birmingham, Ala., will soon ask bids for about five miles of 16 and 24-in. for main lines for new industrial water supply, smaller pipe to be purchased later. Entire project will cost about \$6,000,000. Financing has been arranged.

Bryan, Ohio, plans about 22,000 ft. of 4 to 8-in. for water system extensions. Fund of about \$40,000 is being arranged for this and other waterworks installation.

Stockton, Cal., plans about 3400 ft. of 8 and 10-in., 300 ft. of 12-in., 950 ft. of 15-in., and 120 ft. of 21-in. for water drainage system for municipal airport; also about 2700 ft. of 8-in. for new pressure water system at same place. Lyle Payton is city engineer.

Morton, Wash., closes bids Feb. 17 for 18,000 ft. of different sizes, for water distribution system; also for 10,000 ft. of 10-in. steel pipe (with alternate bids on creosoted wood pipe) for main gravity supply line.

Clay County District No. 1, care of Henrici-Lowry Engineering Co., West Tenth Street Building, Kansas City, Mo., consulting engineer, has voted bonds for \$450,000 for suburban water distribution system in part of Clay County, near North Kansas City, including pipe lines and other waterworks installation. Bids will be asked soon by engineer noted.

Somerville, Tenn., plans pipe lines for water system. Fund of \$38,000 is being arranged through bond issue and Federal aid for this and other waterworks installation. Project will be carried out by Bush Building Co., 805 Eighth Avenue, Nashville, Tenn.

Axtell, Neb., plans pipe lines for water supply. Fund of \$28,000 has been arranged through Federal aid for this and other waterworks installation. Henningson Engineering Co., Union State Bank Building, Omaha, Neb., is consulting engineer.

Decatur, Tex., plans pipe lines for water system; also pumping station, storage reservoir and other waterworks installation. Fund of \$76,000 is being arranged for this and sewerage system. F. J. Zuben, Electric Building, Fort Worth, Tex., is consulting engineer.

Sewage and Water Board, 526 Carondelet Street, New Orleans, asks bids until April 2 for 30-in. pipe for main water line in Magnolia and other streets; also 24-in. pipe with fittings for sewage discharge main, and fittings for other purpose, including sewage station installation. Alfred F. Theard is general superintendent.

Random Lake, Wis., is about to ask bids for waterworks and sewerage systems designed by A. E. McMahon Engineering Co., Menasha, Wis., estimated to cost \$120,900. PWA grant of \$54,405 has been approved. W. E. Hoelz is village clerk.

Appleton, Wis., is in market for 3000 ft. of 6-in. for water main connection to sewage disposal plant.

San Francisco will open bids Feb. 14 on 717 tons of 10, 12, 16 and 20-in.

Oakland, Cal., has awarded 670 tons of 4 and 6-in. to American Cast Iron Pipe Co.

Dos Palos, Cal., let 320 tons to United States Pipe & Foundry Co.

Sacramento, Cal., has placed 125 tons through a contractor's letting.

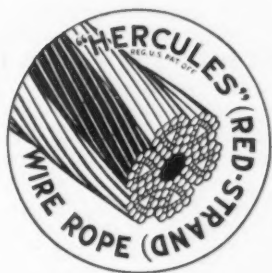
Yakima, Wash., opened bids Feb. 10 on 100 tons of 6, 8 and 18-in.

San Diego, Cal., has taken bids on approximately 200 tons of 6 and 8-in.

Antioch, Cal., has awarded 877 tons of 18-in. to United States Pipe & Foundry Co.

Results Are What Count

If you want real economy—look to results rather than to first cost. It is on this basis that "HERCULES" (Red-Strand) Wire Rope continues to make and hold friends. There are reasons, of course, why this wire rope is so dependable and long lasting, and we are always glad to give full details to everyone interested in saving money. Made in a wide range of constructions including Round Strand, Flattened Strand, Preformed, Non-Rotating and Steel Clad types.



MADE ONLY BY

A. Leschen & Sons Rope Co.

ESTABLISHED 1857

5909 Kennerly Avenue, St. Louis, Mo.

NEW YORK—CHICAGO—DENVER—SAN FRANCISCO

King County, Wash., took bids Feb. 8 on 267 tons of 4 to 12-in.

Pasadena, Cal., has opened bids on water extensions requiring 944 tons of 6, 8, 30 and 36-in. cast iron pipe with alternates on steel and reinforced concrete pipe.

Weather Is Detering Business in South

BIRMINGHAM, Feb. 11.—A tank order requiring approximately 7000 tons of steel has been placed with the Chicago Bridge & Iron Works by the Pan American Refining Corp. The tanks, 25 in number and ranging in capacities up to 118,000 barrels, are to be delivered to the refinery at Texas City, Tex., over a period of several months. Work has been started on the order.

The bad weather of the past month, which has been almost continuous, has interfered with, and slowed up, steel demand. Purchases of wire products and sheets are lighter than were expected, as agricultural business has been almost at a standstill on account of snow, sleet and heavy rains. Construction work in many sections has also been retarded, and this has affected demand for structural steel and reinforcing bars.

Pig iron buying is also light, but this is due to the fact that most foundries have already booked their current requirements.

Pressure pipe bookings, shipments and production show but little change, and follow closely the

January trend. The Alabama WPA has asked for bids Feb. 19 on approximately 2200 tons of 16-in. and 24-in. cast iron pipe to be used in Birmingham's new \$5,800,000 industrial water supply system.

Blast furnace and open-hearth operations are unchanged, with 12 blast furnaces and 14 open-hearths in production. The same schedules will be followed this week. Tennessee Coal, Iron & Railroad Co. is working seven open-hearth units at Fairfield and three at Ensley, with Gulf States Steel operating four at Alabama City.

Two Pennsylvania Blast Furnaces Dismantled

THE Adrian Furnace Co. stack at Du Bois, Pa., will be scrapped by H. E. Salzberg Co., Inc., New York. This stack was last operated in 1930 and had an annual capacity of only 85,000 tons of foundry pig iron. The Salzberg company also recently received contract for dismantling the Punxsutawney Furnace Co. stack at Punxsutawney, Pa. The latter stack was last operated in 1926 and had an annual capacity of only 70,000 tons.

The placer gold mining equipment on location in Montana, which was illustrated on page 34 of THE IRON AGE of Jan. 30, was made by the Link-Belt Co., Chicago. Omission of this credit was an oversight.

Prices Steadier, Sales Still Light in Philadelphia Area



Ship Building Industry Is Most Encouraging Steel Outlet—Local Locomotive Builder Will Soon Buy Heavily

PHILADELPHIA, Feb. 11.—Miscellaneous consumers are again the chief outlets for finished steel in this area. Following a four-month period of maximum activity, autobody stamping plants have currently curtailed steel turnover. Radio builders are not as active, building and road construction is practically at a standstill, and railroad purchases are not as heavy as buyers had anticipated. Fortunately the local shipyards have secured enough business to keep all their ways occupied over the next year, and liberal releases from this quarter have tended to take up the slack left by decreased auto and construction activity.

Furthermore, Baldwin Locomotive Works is again showing some semblance of activity after several years of comparative idleness. This company has booked 24 locomotives; however, much of the steel for this equipment will be supplied by the Steel Corporation and thus will benefit the Pittsburgh area more than eastern Pennsylvania. All steel sellers are hungry for more Pennsylvania Railroad tonnage, but it is likely that additional awards of any magnitude will not develop for several months. The Lackawanna and Lehigh railroads have placed fair tonnages with one district producer.

Bethlehem's three district plants

are operating on an average of 44 per cent. Phoenix has two furnaces on; Worth is bringing in a second furnace this week, and the two units will overlap for at least several weeks; Pencoyd is still melting in four furnaces but is only running one structural mill; Central and Alan Wood are practically unchanged from last week, and Midvale reports increased activity. The district average rate is unchanged at 40 per cent of capacity.

Pig Iron

Day-to-day requisitions on outstanding contracts are holding up in good order. Also, the total volume of releases indicates that the district melt is comparatively good. But the bulk of current needs is covered by cheap fourth quarter contracts, and new ordering on a higher price basis is not expected for four to six weeks. On occasional carlot business for quick shipment, all domestic furnaces and Indian importers are adhering to the higher price basis. Dutch and Russian brands, however, are still easily procured at healthy concessions, and more than one major district melter is taking advantage of this situation to improve his raw-material cast sheet. Imports of Indian and Dutch brands this week totaled about 4480 tons.

Sheets and Strip

Total tonnage being shipped is from 10 to 20 per cent under the January average. The Pennsylvania Railroad and local shipyards are taking fair quantities, but support from jobbers, radio makers and autobody stamping plants has been weakened. Although allowances on certain extras are still apparent in several quarters, there is a distinctly improved price sentiment. Whether sellers are putting up a bold front which later may be weakened cannot at present be determined. Nevertheless, mills have been frightened at the possibility of a total price collapse and are accordingly less prone to secure competitors' accounts at any price. Non-integrated mills are also advocating firmer action for they realize that Feb. 15 marks a deadline beyond which new business in sheet bars and other semi-finished goods will carry a \$2 advance.

Bars, Plates and Shapes

Estimators are now practically idle, and prospects for early awards on outstanding projects are none too hopeful. Like the remainder of the country, this area is experiencing particularly severe weather which has paralyzed building and road construction. From all indications no dependable release from this condition can be expected for at least six weeks. In the interim, shapes, plates and bars will be less favored grades of steel. Some tonnage is going to car builders, shipyards and into miscellaneous outlets, but the total volume involved is far under average fourth quarter commitments. Awards of the week include 2200 tons of shapes for a Nashville, Tenn., court house.

Imports

The following iron and steel imports were received here last week:

HY-TEN "A" TEMPER No. 1X ANALYSIS .20 CARBON-MN-MO ALLOY STEEL

A free machining carburizing steel of controlled grain size suitable for gears, worms, clutches, chuck jaws, cams, forming rolls, spindles, etc., which responds with excellent results to single or double treatment.

IN STOCK FOR IMMEDIATE DELIVERY

WHEELOCK, LOVEJOY & COMPANY, INC.

CAMBRIDGE

CLEVELAND

CHICAGO

NEWARK

DETROIT

3158 tons of chrome ore from Cuba; 3378 tons of pig iron from Netherlands; 1102 tons of pig iron from British India; 56 tons of steel tubes, 7 tons of C D steel wire, 5 tons of steel forgings and 45 tons of steel bars from Sweden.

Scrap

A weather market continues in full force. Dealers' yards are in some cases 100 per cent frozen up, and mill demands for deliveries are for the most part impossible to fulfill in entirety. It cannot be denied that the extreme bullishness of dealers and brokers is predicated to a great extent on expectation of continued inclement weather. On the other hand, mills insist that a week of fair weather would release scrap accumulations, and as their inventories would grow so would the current price structure weaken accordingly. Both the mill and broker attitudes are well held, but until the weather establishes a definite trend one may expect a strong, erratic and comparatively illogical market. During the past few days several extraordinary prices have been paid for emergency shipments, but these prices cannot be interpreted as typical of the market. No. 1 steel continues to be established at \$12.50 to \$13, with the upper figure more representative. Brokers continue to pay \$12.50 to \$12.75 to cover short orders.

Scrap Prices Are Higher at St. Louis


ST. LOUIS, Feb. 11.—Although no scrap iron is being purchased by mills in the St. Louis industrial district, dealers continue to advance their buying prices. The advances are said to be due to a short interest among dealers, which has been made more acute because temperatures at zero and below are seriously affecting shipments from the country to this market. Another factor in shoving prices up is the demand for material in other markets. Nearly all of the items on the list have advanced, the range being from 25c. to \$1.50 a ton. Railroad lists include 70 carloads by the Missouri Pacific and 6000 tons by Louisville & Nashville. It is expected that all of the first named and none of the latter offering will be absorbed in this market. The St. Louis Southwestern has been authorized to retire tracks with a stated reclaimed valuation of \$55,292.

The St. Louis Southwestern Railway has been authorized by the Federal Court here to expend \$297,455 for improvements during

NICKEL SCRAP

Ferro-Nickel; Nickel Bearing Slag; Ferro-Nickel-Chrome Scrap

The export market offers most favorable outlets. Compare our terms with those you are now obtaining. Advise us details of your accumulations.



PHILIPP BROTHERS, INC.
70 PINE STREET,
NEW YORK, N. Y.

1936, including \$217,306 for roadway and \$217,306 for equipment.

Specifications for finished iron and steel are being received in fairly large volume. Structural inquiries are lagging with the falling off of Federal projects and no increase in private jobs. Wire products business has been disappointing, due to dealers and jobbers curtailing early purchases on account of uncertainty as to the purchasing power of farmers. An improvement is expected to supply urgent needs.

Pig iron business is quiet. Melters still are working on material bought during the last quarter of 1935, and shipments and purchases are light.

Pipe Lines

Magnolia Pipe Line Co., Magnolia Building, Dallas, Tex., an interest of Magnolia Petroleum Co., same address, plans new 6 and 8-in. welded steel pipe line from Rodessa, La., oil field district to point near Dixie, La., about 25 miles, for crude oil transmission. Connection will be made at last noted place with main pipe line of company between El Dorado, Ark., and Beaumont, Tex. Surveys for new line have been authorized. Cost close to \$150,000.

Panhandle Eastern Pipe Line Co., 101 West Eleventh Street, Kansas City, Mo., is securing final rights-of-way for new welded steel pipe line from Dana, Ind., present terminus of pipe line from Amarillo, Tex., to Indianapolis and Detroit, originally projected several months ago and delayed through court litigation, now settled. New line will be 285 miles long. Dana-Indianapolis section being 50 miles, and Indianapolis-Detroit line, 235 miles. It will be used for natural gas supply for both cities. Cost about \$16,000,000 with booster stations, terminal mixing and distribution plants and other field construction. Company has contracted to furnish natural gas in Detroit area not later

than July 1, 1936, on basis of 90,000,000 cu. ft. daily; local distribution will be carried out by Detroit City Gas Co. Total line will be longest welded steel pipe line in United States, totaling 1152 miles from Amarillo to Detroit. Financing for new pipe line is now being completed.

Empire Pipe Line Co., Bartlesville, Okla., plans new 6-in. welded steel pipe line from oil field district near Oklahoma City to connection with main pipe line system, about four and one-half miles, for crude oil transmission. Cost close to \$45,000.

Morehead, Ky., plans welded steel pipe line from natural gas field district in Rowan County to town limits for natural gas supply; also pipe lines for local distribution. Harlan Blair, mayor, is in charge.

Consumers Power Co., Jackson, Mich., plans new welded steel pipe lines to St. Johns, Owosso, Ovid, Durand and Corunna, Mich., for natural gas supply, including distribution lines and terminal facilities. Connection will be made with main steel pipe line of company now in course of construction from Montcalm-Mecosta counties natural gas district to point near Lansing, Mich., with junction about seven miles from St. Johns.

Fulton, Mo., has let contract to C. I. Tenney Engineering Co., Frontenac Building, Minneapolis, for steel pipe line system for natural gas distribution, at \$47,767. Part of pipe requirements will be furnished by Youngstown Sheet & Tube Co. Inland Engineering & Management Co., Security Building, St. Louis, is consulting engineer.

San Bernardino, Cal., has opened bids on 150 tons of 6 to 10-in. pipe for Treasury Department.

La Mesa, Cal., has awarded 3000 tons for Lakeside pipe line, to Consolidated Steel Corp.

Standard Oil of Indiana is expected to enter the market for 75 miles of 12-in. steel pipe.

A. O. Smith Corp. has taken an order for 15,000 tons of 20-in. pipe.

St. Louis will buy 9000 tons of steel water pipe.

Fabricated Structural Steel

Awards in Good Volume—New Projects Gain

NORTH ATLANTIC STATES

Everett, Mass., 150 tons, chemical plant addition to New England Structural Co.

Roxbury, Mass., 155 tons, addition to bottling house, to New England Structural Co.

Cranston, R. I., 205 tons, Ward I building, to Providence Steel & Iron Co.

New York, 650 tons, 12-story apartment building at 137-47 East Thirty-eighth Street, to Norton Steel Co.

New York, 375 tons, post office D, at Fourth Avenue and Eleventh Street, to Norton Steel Co.

Brooklyn, 115 tons, Horn & Hardart Co. building, to Jones & Laughlin Steel Corp.

St. Albans, L. I., 210 tons, addition to public school No. 136, to Weatherly Steel Co.

Brooklyn, 265 tons, addition to baking plant, to Floyd G. Schaefer Iron Works.

Elmhurst, L. I., 235 tons, public school No. 127, to Ingalls Iron Works Co.

South Amboy, N. J., 110 tons, State highway bridge, to Bethlehem Steel Corp.

Elizabeth, N. J., 350 tons, vocational school, to Selbach-Mayer Co.

Westfield, N. J., 100 tons, armory, to Selbach-Mayer Co.

Lycoming County, Pa., 150 tons, almshouse, to Steel Fabricating Co.

Philadelphia, 525 tons, airplane and catapult house for navy yard, to Belmont Iron Works.

Sunbury, Pa., 110 tons, two spans for Reading Co. railroad bridge, to Bethlehem Steel Corp.

Edgewood, Md., 125 tons, State highway bridge, to Bethlehem Steel Corp.

Baltimore, 510 tons, high school, to American Bridge Co.

Baltimore, 170 tons, Crown Cork & Seal Co. building, to Dietrich Brothers.

SOUTH AND SOUTHWEST

South Charleston, W. Va., 400 tons, buildings for Westvaco Chlorine Products Co., to Guibert Steel Co.

Reidsville, N. C., 135 tons, post office, to Carolina Steel & Iron Co.

Almond, N. C., 140 tons, State highway bridge, to Bethlehem Steel Corp.

Fayetteville, N. C., 175 tons, State highway bridge, to Bethlehem Steel Corp.

Sheffield, Ala., 180 tons, sub-station for TVA, to Bethlehem Steel Corp.

Boynton, Fla., 110 tons, Palm Beach County bascule bridge, to Nashville Bridge Co.

Pensacola, Fla., 2300 tons, naval air base, to Bethlehem Steel Corp.

Houston, Tex., 230 tons, Market Street bridge, to Bethlehem Steel Corp.

State of Oklahoma, 500 tons, various armories, to Patterson Steel Co., Tulsa.

CENTRAL STATES

Canton, Ohio, 300 tons, Hoover Vacuum Cleaner Co. plant extension, to Canton Structural Steel Co.

Highland Park, Mich., 360 tons, State highway grade crossing elimination, to American Bridge Co.

Detroit, 110 tons, extension to bus terminal, to Taylor & Gaskin Co.

Grand Rapids, Mich., 2125 tons, press foundation girders, Fisher Body Corp., to Jones & Laughlin Steel Corp.

Cincinnati, 440 tons, McMillen Street bridge, to American Bridge Co.

Hammond, Ind., 3300 tons, plant addition for Lever Brothers, to Hamler Boiler & Tank Co.

St. Clair County, Ill., 610 tons, bridge, to St. Louis Structural Steel Co.

Tolono, Ill., 155 tons, State highway bridge, to Bethlehem Steel Corp.

Burlington, Iowa, 175 tons, State highway bridge, to Bethlehem Steel Corp.

East St. Louis, Ill., 500 tons, bridge, to Midland Structural Steel Co.

Pettis County, Mo., 155 tons, bridge, to Kansas City Structural Steel Co.

Vernon County, Mo., 150 tons, bridge, to Missouri Valley Bridge & Iron Co.

WESTERN STATES

Denver, 440 tons, J. C. Penney Co. building, to E. Burkhard & Sons Iron & Wire Works Co.

Pleasant Grove, Utah, 110 tons, two State bridges, to an unnamed bidder.

San Joaquin County, Cal., 300 tons, State bridge over Potato Slough, to Moore Dry Dock Co.

Stockton, Cal., 425 tons, State highway bridge, to Judson-Pacific Co.

San Diego, Cal., 300 tons, Coast Guard air station, to Bethlehem Steel Corp.

Nisqually, Wash., 315 tons, State highway bridge, to Poole & McGonigle.

Grant County, Ore., 280 tons, State highway bridge, to Virginia Bridge & Iron Co.

Honolulu, T. H., 400 tons, packing plant for Libby, McNeill & Libby, to Ingalls Iron Works Co.

NEW STRUCTURAL STEEL PROJECTS

NORTH ATLANTIC STATES

Salem, Mass., 550 tons, Hygrade Sylvania Corp. building.

Newark, N. J., 375 tons, building for Pipe & Tube Bending Corp.

Pittsburgh, 350 tons, Fisher Scientific Co. mercantile building.

Noxontown, Del., 210 tons, school; bids due.

SOUTH AND SOUTHWEST

Kingsport, Tenn., 1100 tons, power house for Eastman Corp.

State of Texas, 1250 tons, bridges.

Houston, Tex., 1200 tons, paper mill.

Yuma, Ariz., 243 tons, tunnel supports on Gila Valley project; bids soon.

CENTRAL STATES

Cleveland, 400 tons, exchange for Ohio Bell Telephone Co.; bids postponed until Feb. 19.

Chicago, 100 tons, Grand Avenue bridge.

Portland, Mich., 300 tons, State highway grade crossing elimination.

Chicago, 16,500 tons, for Outer Drive development.

State of Wisconsin, 1400 tons, bridges; Worden-Allen Co. low bidder.

Franklin, Neb., 120 tons, State highway bridge.

WESTERN STATES

State of Idaho, 100 tons, bridge.

Fremont County, Colo., 162 tons, State bridge between Salida and Canyon City; bids opened.

Santa Barbara, Cal., 300 tons, post office; bids opened.

Santa Barbara, 200 to 300 tons, city auditorium; bids soon.

Los Angeles, 400 tons, wharf and transit shed at berth 155; bids Feb. 19.

Los Angeles, 134 tons, Eagle pumping plant on Colorado River aqueduct; bids March 13.

Mare Island, Cal., 100 tons, angles and channels for navy yard; bids Feb. 14.

Skagit County, Wash., 250 tons, State bridge over Swinomish Slough; bids opened.

FABRICATED PLATES

AWARDS

Pittsburgh, 1450 tons, 10 coal barges for Pittsburgh Coal Co., to Treadwell Construction Co.

Milwaukee, 215 tons, welded steel pipe, to Koppers Co.

San Diego, Cal., 3055 tons, El Capitan-Lakeside pipe line, to Consolidated Steel Corp.

San Francisco, 500 tons, 20 and 24-in. feeder lines, to Western Pipe & Steel Co.

Fresno, Cal., 125 tons, 10-in. welded pipe for Treasury Department, to an unnamed bidder.

Arcadia, Cal., 490 tons, 30-in. welded pipe, to Southwest Welding & Mfg. Co.

Los Angeles, 2000 tons, LaMesa irrigation district pipe line, to Consolidated Steel Corp.

NEW PROJECTS

Los Angeles, 700 tons, Eagle pumping plant on Colorado River aqueduct; bids March 13.

Inglewood, Cal., 150 tons, 24-in. welded pipe; bids Feb. 18.

Sacramento, Cal., 212 tons, two city storage tanks; bids Feb. 20.

San Francisco, 390 tons, 20-in. pipe for Park Presidio-Sunset line; bids taken Feb. 6.

Pasadena, Cal., 192 tons, 30 and 36-in. welded pipe, alternates on reinforced and cast iron pipe; bids opened.

SHEET PILING

AWARDS

Huron, Ohio, 1200 tons, dock for Wheeling & Lake Erie Railroad; 1000 tons to Carnegie-Illinois Steel Corp., and 200 tons to Jones & Laughlin Steel Corp.

San Diego, Cal., 1259 tons, foundation for Civic Center, to Bethlehem Steel Corp.

Fort Peck, Mont., 300 tons, Circular No. 246, to an unnamed bidder.

Heavy Steel Tonnages in Prospect in New York Area



New York Central Buys 38,000 Tons of Rails — East River Tunnel Will Take 100,000 Tons of Steel

NEW YORK, Feb. 11.—While weather conditions are still a definite deterrent to business in this district, spring tonnage prospects are so bright that the market tone, on the whole, is more optimistic. It is now estimated that the proposed East River tunnel to connect Manhattan and Queens will require 100,000 tons of steel. Another large tonnage will be involved if plans go through for the rebuilding of the North River docks between Twenty-third and Thirty-fourth Streets.

A considerable tonnage of steel is still pending for the New York Central track relocation on the West Side of Manhattan and underpinning and foundation work on the Weehawken approach to the Midtown tunnel will require 2000 tons of shapes. Bids were taken today on the main span roadway on the Triborough Bridge which will take about 1800 tons of bars and 1700 tons of structural material. Two buildings in Rockefeller Center will require 2000 tons of shapes.

The New York Central has placed 38,000 tons of rails, of which 22,600 tons went to the Carnegie-Illinois Steel Corp., and the remainder to the Bethlehem Steel Corp., Inland Steel Co. and Algoma Steel Corp. Distribution of the required accessories costing \$1,182,370 was made to 22 producers. The Lehigh Valley is beginning to buy steel for its car repair and rebuilding program and the Delaware, Lackawanna & Western has bought material for the repair of 250 freight cars.

Demand for tin plate continues active for this time of the year and sheets and strip steel are being taken in increasing volume by manufacturing consumers. Hot-rolled bars are rather quiet and sales of pipe are being adversely affected by the weather. Plate demand is centered in shipbuilding activity, although tank work and welded pipe lines are of growing importance.

Pig Iron

Sales are quiet, and in other respects the market remains largely a repetition of foregoing periods this quarter. Foundry orders are confined to carlot quantities, and are usually for prompt shipment. Interest in forward needs is lacking. Shipments can be fairly accurately determined by referring to the rate of new orders, since, as mentioned above, these are represented primarily by immediate or fill-in needs, and, in addition, older contracts have all been fairly well liquidated by now.

Reinforcing Steel

With no let-up in the cold weather, the reinforcing situation is still progressing slowly from week to week. However, the general aspect of the market at this time is rather optimistic. Although large tonnages are not common place, there is generally enough work to keep the dealers active. W. Ames & Co., Jersey City, report an award of 754 tons by the State Procurement Division of the Treasury. A Pennsylvania Railroad bridge involving 100 tons of reinforcing was awarded to J. Rich Steers, Inc., New York. P. Camillo & Co. of Westfield, N. J., were low bidders on 160 tons for New Jersey highway work, as was Wilson & English Construction Co., New York, on 100 tons for grade elimination work at Glendale, N. Y. A Bronx sewer job of 1000 tons, tentatively awarded to Rogers & Haggerty, contractors, is still hanging fire awaiting PWA approval. The largest project in sight at present is that of the roadway paving for the Triborough bridge with about 1800 tons expected to figure in the work. Bids will be opened Feb. 11 on two sections of this job and a third on Feb. 18.

Scrap

Steel and iron grades continue strong but not very active. The weather is still hampering yard

activities, and only a comparatively small amount of material is being processed and shipped to consumers or brokers. What little tonnage is available in northern Jersey is bringing fancy prices for delivery into eastern Pennsylvania, for, in more than one case, brokers are picking up desirable lots at prices equal to or higher than their selling figures. The export situation is still a sluggish affair with boats consistently arriving weeks late and brokers hard pushed to round out cargoes when they do arrive. No. 1 steel is regularly bringing \$9.25 for delivery alongside barges, and No. 2 is priced at \$8 to \$8.25. In both cases slightly higher quotations have ruled when larger lots are involved and brokers require emergency shipment to complete a ship's cargo. The tie-up in export scrap here is influencing brokers here again to concentrate on shipments from Southern and Gulf ports. Boston, however, continues to be fairly active, and a boat has just cleared that port for Scotland with 3500 tons of No. 1 steel.

Sheet Output Still High at Cincinnati

CINCINNATI, Feb. 11.—The district scrap market is a paradox. New ordering is relatively nil, being only small lots for immediate needs, while the market tends stronger in tone daily. Dealers' bids, while unchanged, are receiving more respect from consumers and reports of better prices on old materials lists in other areas added further to the strong market undertone. In addition, ice floes tended to retard barge shipments, thus further restricting available material. Mills, on the other hand, already harassed by advancing costs on other raw materials, resist advances in old materials. Ordering, therefore, is restricted to small amounts, and users refuse to meet the optimism of scrap dealers.

Pig iron shipments tend upward as furnace interests indicate the need of users to order out all material under contract by April 1. New ordering is in small volume, but producers anticipate good demand when present commitments are completed. Foundry operations are brisker with machine tool melters accounting for a large percentage of the current increase.

Colder weather conditions have stimulated the district coke market. Domestic demand is fast approaching a record high level and

foundry grades are increasingly brisker.

The district sheet steel market is adhering to a level of about 85 per cent of capacity output. Rolling schedules are on a parity with demand to meet shipping requirements. Demand from automotive sources is expanding along with refrigerator requirements and the broad general demand is undiminished.

The rate of steel making is unchanged since last week. Ingot output still hovers around 72 per cent.

Large Traction Job Pacific Coast Feature

SAN FRANCISCO, Feb. 10.—With plans and specifications completed for the construction of the San Francisco-Oakland bridge interurban rail system, involving an expenditure of \$14,500,000, bids will be called as soon as financing has been arranged with the Reconstruction Finance Corporation. The cost of the system will be divided as follows: San Francisco terminal and approaches, \$6,300,000; alterations to railroad equipment, \$3,844,000; track work on bridge, \$640,000; connections, storage yard, electrical distributing system, signals and interlocking equipment, \$3,500,000. Construction is expected to be completed early in 1938.

The Bureau of Reclamation has just made an adjustment of \$6,700,000 with Mason, Walsh, Atkinson, Kier Construction Co. covering additional work on the re-designed Grand Coulee dam. Steel involved in the original contract aggregated approximately 20,000 tons of steel piling, 5560 tons of structural, 12,500 tons of reinforcing bars and 4649 tons of plates.

An award at Oakland, Cal., of 670 tons of cast iron pipe to American Cast Iron Pipe Co. featured the past week's lettings, which were limited in number. Among new projects listed was the call for bids at Los Angeles for a wharf and transit shed which will involve 400 tons of structural steel, 400 tons of rails and 125 tons of bars. Two tanks at Sacramento will require 700 tons of reinforcing bars and 212 tons of plates.

Continuance of restricted scrap export to the Orient, below that of a year ago, has resulted largely from unfavorable shipping conditions and increased domestic demand which has strengthened prices and extended the area of supply. Mill operations are at a favorable rate and warehouse business is slightly above that at the same time in 1935.

Cold Checks Boston Scrap Movement

BOSTON, Feb. 11.—Continuous freezing weather has further restricted the movement of scrap. As a result, shippers are hard put to fill orders and top prices rule for all materials. Exporters now pay \$9.50 a ton, delivered Army Base, for No. 2 steel and \$10.50 for No. 1. Dealers with Pittsburgh and eastern Pennsylvania orders are paying as much or nearly as much for material as their selling prices. Breakable cast is 50c. a ton higher, stripped engine blocks are up 25c. and most other material prices are firmer. Stove plate for Pennsylvania delivery is very strong at \$5 to \$5.25 a ton on cars. For short steel turnings, not for steel mill use, as high as \$4.35 a ton, f.o.b., has been paid. No sales of cotton ties are noted at less than \$6 a ton, whereas a week or 10 days ago sales at 50c. less were made. For western Massachusetts delivery, No. 1 textile cast is moving in a limited way at \$10.50 a ton delivered, and textile cast at \$10. Two held-over steamers are here loading 10,300 tons for export. No other steamers arrived the past week to load.

The pig iron market is very quiet. Even truckload orders are at a minimum. Foundry operations have been somewhat curtailed by weather conditions, but the future is encouraging. Textile machinery and machine tool builders are the best fortified with orders.

As is to be expected, little cast iron pipe business is noted. Foundries anticipate a good spring business, however, and are holding to price lists.

Railroad Equipment

Bessemer & Lake Erie and the Union Railroads, subsidiaries of United States Steel Corp., have placed orders for 3000 freight cars and 24 locomotives, amounting to a total expenditure of \$13,045,000. Two thousand cars will be large capacity hopper types constructed of high tensile steel, and the others will be mill-type steel gondolas of ordinary steel. Companies receiving the contracts are: Pullman-Standard Car Mfg. Co., 1000 cars; American Car & Foundry Co., 750 cars; General American Car Co., 250 cars; Pressed Steel Car Co., 600 cars; Greenville Car Co., 200 cars; Ralston Steel Car Co., 100 cars; Magor Car Corp., 100 cars; Baldwin Locomotive Works, 10 Texas type 10-wheel locomotives for B. & L. E., and five heavy 10-wheel switching locomotives for the Union; American Locomotive Co., four 8-wheel switching locomotives for the B. & L. E., and Lima Locomotive Works, five 6-wheel switching locomotives for Union Railroad. In announcing purchases, the companies stated that they have endeavored to place these orders over a territory which will provide as much work as possible for various car companies in the Pittsburgh area, where well over 50 per cent of the work will be done.

Burlington has ordered two 3000-hp. locomotives and two 1800-hp. engines, all Diesel-electric type, from Electro-Motive Corp., Lagrange, Ill. The larger units

will be used on new streamline trains to be put in service between Chicago and Denver, and the smaller units will be used between Chicago and the Twin Cities.

Denver & Rio Grande Western plans to spend \$6,000,000 to repair locomotives, improve roadbeds, air-condition passenger cars and lay rails.

South African Railways and Harbours are asking for bids on 50 locomotives. A. G. Watson is chief mechanical engineer at Pretoria, Union of South Africa.

Western Maryland is asking for bids on 20 to 25 freight cars.

Aluminum Co. of America is inquiring for 22 to 44 70-ton hopper cars.

Western Pacific has placed orders with American Car & Foundry Co. for 100 50-ton steel Hart ballast cars.

Milwaukee Road, upon approval of RFC, will build in its own shops 1500 freight cars, 20 coaches, two dining cars, three parlor cars and two taproom cars.

Lehigh & New England ordered from Baldwin Locomotive Works, one special six-wheel switching engine.

St. Louis-Southwestern has been authorized by the court to make the following expenditures: Applying auto loading devices to 100 automobile cars, \$53,000; increasing height of 500 box cars from 9 ft. 6 in. to 10 ft. 2 1/4 in., \$31,785; building 10 trust series box and auto cars to replace cars destroyed, \$19,250; applying steel underframes to three cabooses, \$1,028; freight cars, \$107,865; converting one passenger car and 26 freight cars to work cars, \$7,028; steel underframe unloader, \$1,286.

American Car & Foundry Motors Co. has received following orders for a.c.f. motor coaches: Columbus Railway Power & Light Co., 12; Boston Elevated Railway, five; Worcester Street Railway, 10.

RAILS AND TRACK SUPPLIES

St. Louis-Southwestern has been authorized by the court to expend \$108,384 for roadway improvements, including relaying tracks with heavier material, \$8,998; constructing 1146 ft. to serve as leg of Y at Pine Bluff, Ark., \$3,578, and to apply 9865 joint tie plates, 157,953 new tie plates and 71,000 second-hand tie plates.

Rock Island is expected to purchase 35,000 tons of rails.

Milwaukee Road may soon purchase 30,000 tons of rails.

Kansas, Oklahoma & Gulf will purchase 6752 tons of rails and fastenings.

Denver & Rio Grande Western has ordered 10,000 tons of rails from Colorado Fuel & Iron Co.

Los Angeles, will take bids Feb. 19 on 400 tons of rails for a wharf and transit shed at berth 155.

Long Beach, Cal., has taken bids on 603 tons of 128 and 149 lb. rails on which Bethlehem Steel Co. is low bidder.

San Francisco has awarded 250 tons of 110 lb. girder rails for Market Street Railway Co.

Seattle has placed 500 tons of 82 lb. rails for city with Bethlehem Steel Corp.

The New York Central has placed 38,000 tons of rails, of which 22,600 went to the Carnegie-Illinois Steel Corp., and the remainder to the Bethlehem Steel Corp., Inland Steel Co. and Algoma Steel Corp. This road also placed orders for track accessories and fastenings to the amount of \$1,182,370 with the following companies: American Fork & Hoe Co., Bethlehem Steel Corp., Carnegie-Illinois Steel Corp., Cleveland Frog & Crossing Co., Creepcheck Co., Eaton Mfg. Co., Hubbard & Co., Illinois Malleable Iron Co., Inland Steel Co., Jones & Laughlin Steel Corp., National Lock Washer Co., Positive Rail Anchor Co., Rail-Joint Co., Ramapo Ajax Corp., Republic Steel Corp., Taylor-Wharton Iron & Steel Co., Weir-Kilby Corp., Weirton Steel Co., Wheeling Steel Corp., Woodlings Forge & Tool Co., and Youngstown Sheet & Tube Co.

Improved Buying of Copper Abroad Strengthens Domestic Sentiment

Zinc Stocks Decline 4642 Tons—Tin Prices Largely Nominal, as Demand Approaches Standstill—Inquiry for Lead Moderates

NEW YORK, Feb. 11.—Although copper interests were disappointed by the failure of the Supreme Court to hand down a decision on TVA, market sentiment in general is brighter. More active trading in the foreign market, with sales reported abroad this morning at 8.85c. a lb., has strengthened the undertone here. Domestic sales so far this month have been averaging approximately 1000 tons daily. Yesterday's volume was 814 tons, which raised total sales in February to 8748 tons. Shipments are picking up again after having remained rather quiet throughout January. A decision favorable to the utilities on the question of TVA would un-

doubtedly be bullish. For this reason copper interests are watching the case closely. The domestic price is firm at 9.25c. a lb., Connecticut Valley.

Tin

Consumers appeared to be almost oblivious to the market's existence last week, and prices have remained largely nominal. Since a week ago today spot quotations have been confined to a ½c. range, the attitude of dealers being that inquiry could not be stimulated by the simple expedient of easing prices within common-sense limits. Spot Straits metal at New York is quotable today at 48.12½c. a lb. Lack of

buying interest is explained by the assumption that consumer stocks are large enough to care for needs on the basis of current manufacturing operations. It is believed that tin plate mills will have to expand operations considerably if they are to be forced back into the market any time soon. The London market has improved recently, but there has been no effect here. Standard metal sold there this morning at £216 10s for spot and £199 10s for futures. The Eastern price was £205.

Lead

Inquiry for lead has moderated, but, on a quiet basis, business continues to be done. Sales last week were aided by offerings to customers whose needs could not be fully satisfied in the very active period two weeks ago. February is now approximately 80 per cent covered. Cable makers are reported entirely out of the market again after having figured rather prominently for a period of about three weeks. The American Bureau of Metal Statistics reports that from Jan. 1, 1935, to Jan. 1, 1936, total stocks of all types of lead declined 800 tons to 313,000 tons by the latter date. In other words, production and consumption have been a little better than in balance.

Zinc

January production of all grades of zinc, according to the American Zinc Institute, totaled 41,826 tons, or 1363 tons more than in December. Shipments were 46,468 tons, or 4497 tons heavier. Stocks declined to 79,116 tons by Jan. 31, indicating that shipments overbalanced production by 4642 tons. A statistical trend favorable to zinc has been in process for quite some time, but, on the other hand, weakness in the world price of the metal has tended to offset this advantage. Sales last week of 2000 tons were lighter than Prime Western bookings in the period before. Shipments held up, however, and accordingly unfilled orders declined 1030 tons to 39,489 tons at the week's close. Bad weather restricted ore production last week. The domestic price for zinc is firm at 4.85c. a lb.

Ingot Brass and Bronze

During 28 days ended Jan. 24, the average prices received by members of the Non-Ferrous Ingot Metal Institute for commercial 80-10-10 and commercial 85-5-5-5 brass ingots were 10.806c. and 9.306c. a lb. respectively. Preceding prices were 10.611c. and 9.124c. a lb.

The Week's Prices. Cents Per Pound for Early Delivery

	Feb. 5	Feb. 6	Feb. 7	Feb. 8	Feb. 10	Feb. 11
Electrolytic copper, Conn.*	9.25	9.25	9.25	9.25	9.25	9.25
Lake copper, N. Y.	9.37½	9.37½	9.37½	9.37½	9.37½	9.37½
Straits tin, Spot, New York	47.87½	47.75	47.62½	47.87½	47.87½	48.12½
Zinc, East St. Louis	4.85	4.85	4.85	4.85	4.85	4.85
Zinc, New York†	5.22½	5.22½	5.22½	5.22½	5.22½	5.22½
Lead, St. Louis	4.35	4.35	4.35	4.35	4.35	4.35
Lead, New York	4.50	4.50	4.50	4.50	4.50	4.50

*Delivered Connecticut Valley; price ¼c. lower delivered in New York.
†Includes emergency freight charge.

Aluminum, virgin 99 per cent plus, 19.00c.-22.00c. a lb., delivered.
Aluminum, No. 12 remelt, No. 2 standard, in carloads, 17.00c. lb., delivered.
Nickel, electrolytic, 35c. to 36c. a lb. base refinery, in lots of 2 tons or more.
Antimony, Asiatic, 12.87½c. a lb., New York.
Quicksilver, \$77.50 to \$80.00 per flask.
Brass ingots, commercial 85-5-5-5, 9.50c. a lb., delivered; in Middle West ¼c. a lb. is added on orders for less than 40,000 lb.

From New York Warehouse

Delivered Prices, Base per Lb.

Tin, Straits pig	49.00c. to 50.00c.
Tin, bar	51.00c. to 52.00c.
Copper, Lake	10.25c. to 11.25c.
Copper, electrolytic	10.25c. to 11.25c.
Copper, castings	10.00c. to 11.00c.
*Copper sheets, hot-rolled	16.50c.
*High brass sheets	14.62½c.
*Seamless brass tubes	16.87½c.
*Seamless copper tubes	17.00c.
*Brass rods	13.12½c.
Zinc, slabs	5.75c. to 6.75c.
Zinc, sheets (No. 9), casks, 1200 lb. and over	10.25c.
Lead, American pig	5.00c. to 6.00c.
Lead, bar	6.00c. to 7.00c.
Lead, sheets, cut	8.25c.
Antimony, Asiatic	14.00c. to 15.00c.
Alum., virgin, 99 per cent, plus	23.30c.
Alum., No. 1 for remelting, 98 to 99 per cent	18.50c. to 20.00c.
Solder, ½ and ⅓	29.50c. to 30.50c.
Babbitt metal, commercial grades	25.00c. to 60.00c.

*These prices are also for delivery from Chicago and Cleveland warehouses.

From Cleveland Warehouse

Delivered Prices per Lb.

Tin, Straits pig	53.00c.
Tin, bar	55.00c.

Copper, Lake	10.25c.
Copper, electrolytic	10.25c.
Copper, castings	10.00c.
Zinc, slabs	6.25c. to 6.50c.
Lead, American pig	5.20c. to 6.50c.
Lead, bar	8.50c.
Antimony, Asiatic	17.00c.
Babbitt metal, medium grade	19.25c.
Babbitt metal, high grade	57.00c.
Solder, ½ and ⅓	30.00c.

Old Metals, Per Lb., New York

Buying prices are paid by dealers for miscellaneous lots from smaller accumulators, and selling prices are those charged to consumers after the metal has been prepared for their uses. (All prices are nominal.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	7.12½c.	7.87½c.
Copper, hvy. and wire	7.00c.	7.50c.
Copper, light and bottoms	6.00c.	6.50c.
Brass, heavy	4.00c.	4.62½c.
Brass, light	3.25c.	4.00c.
Hvy. machine composition	6.00c.	6.50c.
No. 1 yel. brass turnings	5.12½c.	5.62½c.
No. 1 red brass or compos. turnings	5.62½c.	6.12½c.
Lead, heavy	3.50c.	3.87½c.
Zinc	2.50c.	2.87½c.
Cast aluminum	12.12½c.	13.25c.
Sheet aluminum	13.25c.	14.75c.



Plant Expansion and Equipment Buying

Tool Buyers Pressing For Early Delivery

WHILE the flow of machine tool orders continues in good volume, users, pressing for early shipment, are showing a tendency to shop for deliveries before placing orders. This insistence upon early installing of new equipment indicates the definite need for retooling and the "shopping" attitude tends toward a greater distribution of new business. The automobile manufacturers are the most active in the present market, although the scope of interest is wide.

Inquiry is brisker in the Cincinnati district and factory operations are about sixty (60) per cent of capacity. Dealer and factory sales throughout the country show a general upward trend.

◀ NORTH ATLANTIC ▶

Continental Can Co., 100 East Forty-second Street, New York, has let general contract to Austin Co., Cleveland, for one-story addition to branch plant at Memphis, Tenn., 100 x 300 ft., to be used in part for storage and distribution. Cost close to \$85,000 with equipment. Company has also arranged for purchase of can-manufacturing plant of Armour & Co., Chicago, meat packers, for new branch factory at that place.

Eastern States Petroleum Co., 630 Fifth Avenue, New York, plans new gasoline refinery on Houston ship channel, Houston, Tex., with storage and distribution facilities, to be operated in conjunction with former oil refining plant of Deepwater Refineries, Inc., at that place, recently acquired as new main plant. Cost over \$200,000 with equipment.

Signal Supply Officer, Army Base, Brooklyn, asks bids until Feb. 18 for voltage regulator sets (Circular 41); until Feb. 24, 24,000 ft. of cable and 24 reels (Circular 129), 15,000 plugs (Circular 127).

Phelps Dodge Copper Products Corp., 40 Wall Street, New York, has let general contract to Wigton-Abbott Corp., 143 Liberty Street, for two one-story additions to plant at Elizabeth, N. J. Cost close to \$50,000 with equipment.

George Ehret Brewing Co., 38 Pine Street, New York, has acquired former brewery of Eppig Brewing Co., Evergreen and Central Avenues, Brooklyn, and will remodel for new plant, with installation of new equipment for increase in former capacity. Cost over \$250,000 with machinery.

United States Engineer Office, First District, New York, asks bids until Feb. 18 for two cast steel propellers (Circular 291).

Electro-Metallurgical Co., 30 East Forty-second Street, New York, affiliated with Union Carbide & Carbon Corp., same address, will soon begin superstructure for one-story addition to plant at Alloy, W. Va. Cost over \$75,000 with equipment.

Department of Water Supply, Gas and Electricity, Municipal Building, New York, has filed plans for extensions and improvements in central service and distribution station at 350-64 Flushing Avenue, Brooklyn. Cost about \$250,000 with equipment. Joseph Goodman is acting chief engineer for department.

American Can Co., 230 Park Avenue, New York, has acquired can-manufacturing plant of Libby, McNeil & Libby, Union Stock Yards, Chicago, food packers, and will expand for new producing plant.

Automatic Telephone Dialer, Inc., 91 West Runyon Street, Newark, N. J., manufacturer of automatic telephone equipment, has purchased one and two-story factory, 55 x 100 ft., at 277-79 Coit Street, Irvington, N. J., heretofore held by Electro Gear Corp., and will improve for new plant, removing present works to new location and increasing production facilities. Thomas W. MacKenzie is president.

Board of Education, Mount Holly, N. J., Robert C. B. Parker, supervising principal, plans manual training department in new two-story Rancocas Valley Regional High School, for which bids will be asked soon on general contract. Fund of \$450,000 is being arranged.

Bureau of Yards and Docks, Navy Department, Washington, asks bids (no closing date stated) for automatic combustion control equipment and stoker motors for 12 boilers at navy yard, Philadelphia (Specification 8147).

Atlantic Refining Co., 260 South Broad Street, Philadelphia, has let general con-

tract to W. M. Kellogg Co., 225 Broadway, New York, for new oil refinery on Neches River, Atreco, near Beaumont, Tex., where large tract has been secured. A gasoline refinery will be included, with steel tanks and other equipment for storage and distribution. Operating units will occupy an area 400 x 800 ft. G. M. Wehrle is company construction engineer in charge. Cost over \$2,000,000 with machinery.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Feb. 18 for 48 pneumatic reversible drills (Schedule 7190), 400 aircraft inclinometers (Schedule 7176) for Philadelphia Navy Yard.

Commanding Officer, Frankford Arsenal, Philadelphia, asks bids until Feb. 17 for ball bearings (Circular 325); until Feb. 21, one punch press (Circular 309); until Feb. 18, two hobs (Circular 326).

◀ NEW ENGLAND ▶

Commanding Officer, Springfield Armory, Springfield, Mass., asks bids until March 3 for three bench type drilling machines, motor-driven (Circular 120).

Hull Brewing Co., Congress Avenue, New Haven, Conn., has let general contract to Fusco-Amatruda Co., Amity Road, for four-story addition. Cost over \$50,000 with equipment. Company has work under way on three-story addition, for which general contract recently was let to same company, for storage and distribution. Cost about \$60,000 with equipment. A. M. Thomas and Harold Davis, New Haven, are consulting engineers.

Continental Can Co., 100 East Forty-second Street, New York, is considering new multi-unit branch plant at Malden, Mass. Cost over \$125,000 with equipment.

Department of Public Works, 13 Temple Street, Quincy, Mass., has asked bids on general contract for new one-story municipal repair and equipment shop, with storage and distribution facilities, service and garage unit for city-owned automobiles and trucks. Cost about \$80,000 with equipment. E. J. Batty, 1254 Brook Road, Milton, Mass., is architect.

Bryant Electric Co., Weaver Avenue, Bridgeport, Conn., manufacturer of electric switches, sockets, etc., a subsidiary of Westinghouse Electric & Mfg. Co., East Pittsburgh, has asked bids on general contract for one-story addition, 90 x 200 ft., for its Hemo Molding Division, manufacturer of insulated moldings and allied electrical products. Cost about \$70,000 with equipment. Fletcher-Thompson, Inc., 1336 Fairfield Avenue, is architect and engineer.

◀ BUFFALO DISTRICT ▶

Trico Products Corp., 817 Washington Street, Buffalo, manufacturer of automotive equipment and accessories, has asked bids on general contract for five-story and base-

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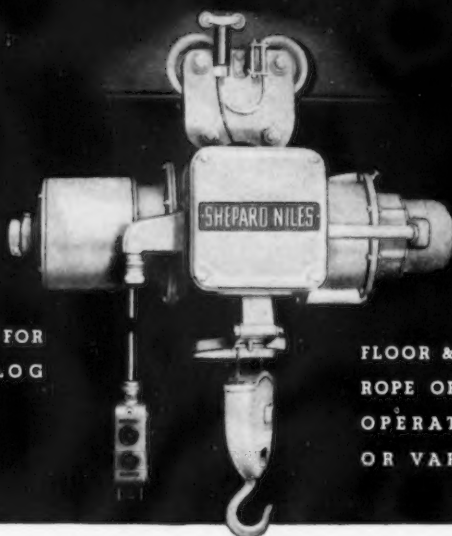
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ment addition. Cost over \$100,000 with equipment.

United States Engineer Office, Federal Building, Buffalo, asks bids until Feb. 18 for one feedwater pump and accessories (Circular 81).

K. R. Wilson, 10 Lock Street, Buffalo, manufacturer of machinery and tools for automobile repair work, plans rebuilding part of plant at Arcade, N. Y., including main assembling division, recently destroyed by fire. Loss over \$100,000 with equipment.

Central Rural School District No. 1, Holland Patent, N. Y., plans manual training department in new two-story school, for which bids are being asked on general contract until Feb. 15. Cost about \$425,000. Kinne & Frank, 7 Hopper Street, Utica, N. Y., are architects.

◀ SOUTH ATLANTIC ▶

Chevrolet Motor Co., McDonough Road, Atlanta, Ga., with headquarters at Detroit, plans one-story addition to branch assembling plant at first noted place. Cost close to \$250,000 with equipment.

United States Engineer Office, Charleston, S. C., asks bids until Feb. 20 for suction line and pumping unit for dredge (Circular 50).

International Harvester Co., 606 South Michigan Avenue, Chicago, motor truck division, has let general contract to W. D. Griffin, Macon, Ga., for new one-story factory branch, storage and distributing plant at Macon. Cost about \$35,000 with equipment.

Seydel-Woolley Co., 748 Rice Street, N. W., Atlanta, Ga., manufacturer of industrial chemicals, etc., will take bids at once on general contract for one-story ad-

dition. Cost over \$30,000 with equipment. Robert & Co., Bona Allen Building, are engineers.

South Carolina Power Co., Charleston, S. C., plans new transmission and distributing lines for rural electrification, including power substation and service facilities, totaling about 100 miles. Cost about \$95,000. Appropriation is being arranged.

◀ WASHINGTON DIST. ▶

Commanding Officer, Aberdeen Proving Ground, Aberdeen, Md., asks bids until Feb. 27 for one 10-ton traveling crane for installation in Building 360 (Circular 80).

Baltimore Pure Rye Distilling Co., Dundalk, Baltimore, has asked bids on general contract for six-story addition, 120 x 195 ft., for storage and distribution. Cost over \$150,000 with equipment.

Smith Mountain Power Co., Alexandria, Va., care of Willis G. Waldo, 522 Mills Building, Washington, president, recently organized, plans new hydroelectric power plant on Roanoke River, near Alexandria, with initial capacity of about 30,000 hp. Project will include transmission and distributing lines. Cost over \$800,000. G. C. Boyer, Richmond, Va., is engineer.

Purchasing and Contracting Officer, Holabird Quartermaster Depot, Baltimore, asks bids until Feb. 28 for one bench lathe, one lathe bench with skids, etc., one oxy-acetylene combination welding and cutting outfit, one arc-welding and power generating machine, one work bench, one arbor press, one brake relining machine, one electric drill, one electric grinder, one set lead burning outfit, one panel board, two power units, machinist's vise, etc. (Circular 101).

City Council, Hagerstown, Md., plans

new hangar, 100 x 100 ft., with repair and reconditioning facilities at municipal airport.

Farmers Rural Utilities, Inc., Bowling Green, Va., recently organized, plans new transmission and distributing lines in parts of Hanover, Orange and Caroline counties for rural electrification, including power substation and service facilities. Fund of \$366,000 has been secured through Federal aid for project.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Feb. 18 for one metal melting furnace (Schedule 7150), fireroom draft gages (Schedule 7180), composition valves (Schedule 7178), one motor-driven precision bench lathe (Schedule 7188), 24 water pressure recorders (Schedule 7173) for Eastern and Western navy yards.

Quartermaster, Fort Hoyle, Md., asks bids until Feb. 19 for one gasoline motor-driven pumping unit (Circular 70).

◀ SOUTH CENTRAL ▶

Hardwick Stove Co., Cleveland, Tenn., has begun superstructure for one-story addition. Cost over \$85,000 with equipment.

United States Engineer Office, Vicksburg, Miss., asks bids until Feb. 25 for one centrifugal pumping unit with accessories (Circular 14).

City Council, Knoxville, Tenn., George R. Dempster, city manager, in charge, has plans for new hangar, 100 x 125 ft., at municipal airport, with repair and reconditioning facilities. Cost about \$35,000 with equipment.

Alabama Power Co., Birmingham, plans about 500 miles of transmission and distributing lines for rural electrification, with power substation and service facilities. Cost about \$700,000. Appropriation is being arranged.

Pelican Oil & Gasoline Co., Shreveport, La., has let general contract to Frick-Reid Co., Tulsa, Okla., for new gasoline refinery in oil field district at Rodessa, La. Storage and distribution division will be installed with steel tanks and operating equipment. Cost over \$150,000 with machinery.

Standard Oil Co. of Kentucky, 430 West Bloom Street, Louisville, has plans for new bulk oil storage and distributing plant in Biloxi, Miss. Cost over \$45,000 with equipment.

◀ SOUTHWEST ▶

Barnsdall Oil Co., Tulsa, Okla., an interest of Barnsdall Corp., Chicago, plans new booster pumping station for natural gas system at Oklahoma City. Cost close to \$40,000 with equipment.

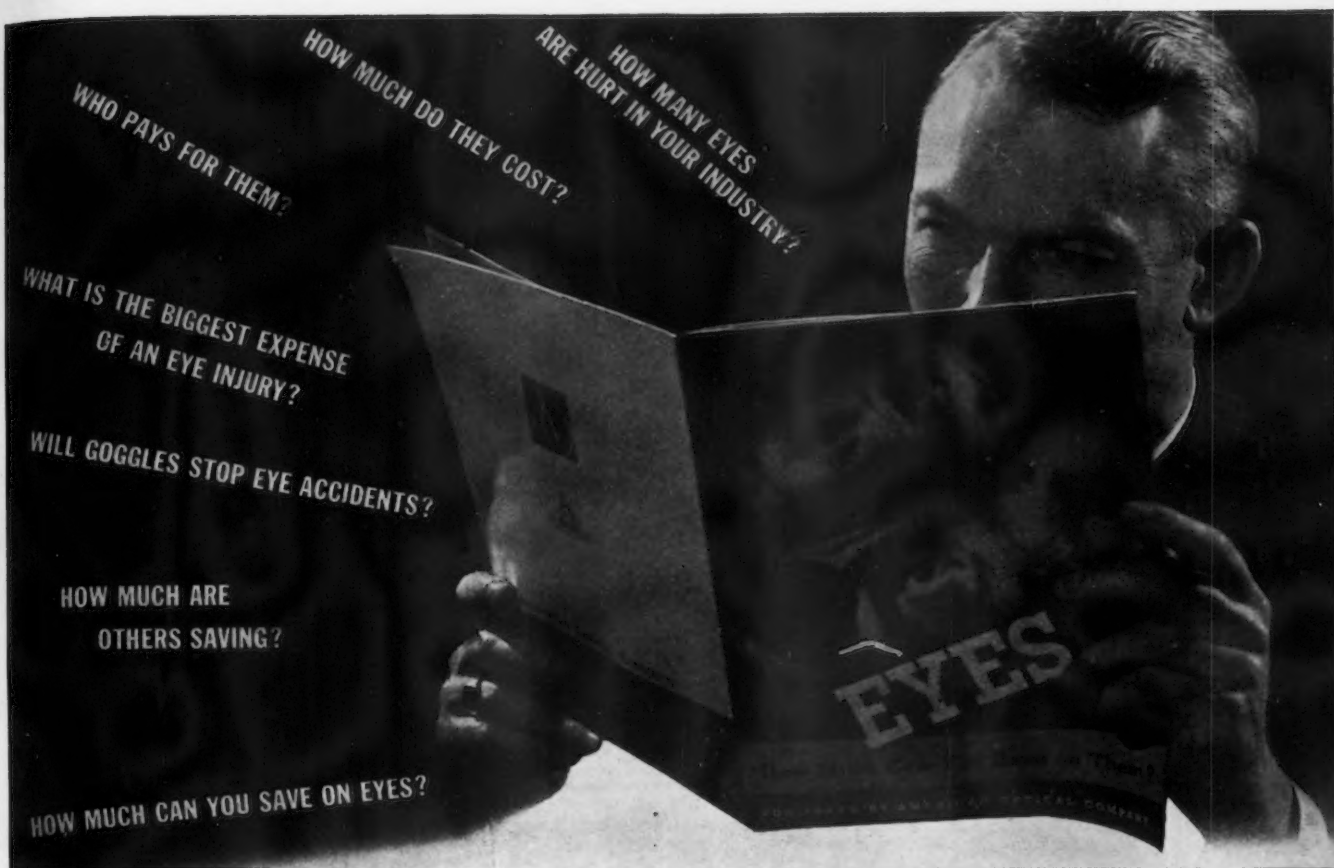
Board of Education, Duncan, Okla., plans manual training equipment in new two-story high school and junior college, for which general contract has been let to Harmon Construction Co., 601 North Indiana Street, Oklahoma City. Cost about \$140,000. J. B. White, Ardmore, Okla., is architect.

Phillips Petroleum Co., Bartlesville, Okla., plans new gasoline refinery with storage and distributing facilities, including tanks, etc., at Oklahoma City. Cost about \$75,000 with equipment.

Brance-Kracy Corp., 1901 Caroline Street, Houston, Tex., manufacturer of electrical equipment, parts, etc., has acquired property on Navigation Boulevard for new plant. Existing buildings will be remodeled. Cost over \$30,000 with equipment.

City Council, Liberty, Tex., will take bids early in March for equipment for new municipal electric power plant, including electrical distribution lines. Fund of \$95,000 has been arranged through Federal aid. Garrett Engineering Co., Houston, Tex., is consulting engineer.

Bureau of Aeronautics, Department of Commerce, Washington, has approved plans for new hangar with shop and repair facilities at Kelly Field, Wichita Falls, Tex., with other field units, and has authorized appropriation of \$64,400 for work, including improvements in existing structures.



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United States Engineer Office, Galveston, Tex., asks bids until Feb. 17 for castings, including stuffing boxes, pipe flanges, outboard stuffing boxes, distance pipe man-hole cover, gaskets, ball joints, etc. (Circular 179), two cutters, complete with ring, hub, blades, bolts and keys, and two extra cutter blades (Circular 180).

WESTERN PA. DIST.

Viscose Co., Meadville, Pa., manufacturer of cellulose rayon products, plans addition to local mill to double present capacity. Cost over \$1,000,000 with machinery. Company headquarters are at 200 Madison Avenue, New York.

Wilson & Co., 1147 Pennsylvania Avenue, Pittsburgh, meat packers, with headquarters at Union Stock Yards, Chicago, have let general contract to Edward Crump, Jr., 4031 Bigelow Boulevard, Pittsburgh, for addition to local packing plant, including improvements in present building. Cost over \$45,000 with equipment.

Jones Collieries, Inc., Chamber of Commerce Building, Pittsburgh, Marshall J. H. Jones, president, recently organized, has taken over Rachel coal-mining properties near Mannington, W. Va., and will develop for large output. Work will include completion of new tippie, previously started by former owners, with installation of conveying, hoisting, loading and other mechanical-handling equipment. Cost close to \$45,000. J. Stanley Jones is secretary and treasurer.

OHIO AND INDIANA

Columbia Alkali Corp., Barberton, Ohio, a subsidiary of Pittsburgh Plate Glass Co., Pittsburgh, has let general contract to Austin Co., Cleveland, for addition to local plant for manufacture of chlorine and kindred chemical products, with improvements in part of present works. Cost over \$1,000,000 with equipment. H. K. Ferguson Co., Cleveland, is consulting engineer. Main offices of Columbia company are at 30 Rockefeller Plaza, New York.

Industrial Rayon Corp., West Ninety-eighth Street and Walford Avenue, Cleveland, plans multi-story addition to local plant to operate under new process. Cost close to \$1,000,000 with machinery. Com-

pany will also build another plant unit of like size in location soon to be selected, erection to follow completion of Cleveland mill. It is understood that plans will be drawn by Christian, Schwarzenberg & Gaede Co., Union Building, architect.

Union Gas & Electric Co., Fourth and Main Streets, Cincinnati, plans extensions and improvements in West End generating plant, with installation of new turbo-generator unit and auxiliary equipment. Cost about \$2,000,000. Company is also planning extensions and improvements in transmission and distribution lines, including number of new lines, expansion in power substation facilities and miscellaneous work, to cost over \$1,500,000. Columbia Engineering Corp., Fourth and Elm Streets, is consulting engineer. Both companies are subsidiaries of Columbia Gas & Electric Co., New York.

Contracting Officer, Material Division, Air Corps, Wright Field, Dayton, Ohio, asks bids until Feb. 17 for five racks or counters (Circular 524); until Feb. 18, adjustable toolmakers' knees (Circular 534); until Feb. 19, two standard signal generators (Circular 520), transformers, resistors, jacks, condensers, potentiometers and other equipment (Circular 529); until Feb. 20, 237,500 ft. of aircraft power and lighting cable, and 27,500 ft. of rubber-covered flexible cord (Circular 523); until Feb. 24, six motor-driven boring machines (Circular 533), 24 flotation gear bag assemblies (Circular 530), two motor-driven radial drill presses and one motor-driven drill press (Circular 537), six propeller blades, 12 ft. diameter (Circular 531); until Feb. 25, two two-speed hydraulic jacks, high-lift type (Circular 542).

Baxter Steel Equipment Co., Indianapolis, R. Norman Baxter, head, recently organized, has taken over plant of Keyless Lock Co., Pike and Hovey Streets, about 75,000 sq. ft. floor space, and will improve for production of steel furniture, store equipment, steel display racks and kindred specialties. Keyless Lock Co., will continue operations at its other local plant at 1401 Newman Street.

MIDDLE WEST

Crane Co., 836 South Michigan Avenue, Chicago, manufacturer of heating and plumbing equipment, pipe, fittings, etc., has plans for one-story addition to plant

at Forty-first Street and Kedzie Avenue. Cost over \$50,000 with equipment. William J. Clark is company architect.

Northwest Engineering Co., 28 East Jackson Boulevard, Chicago, manufacturer of derricks, cranes and other heavy machinery and parts, has awarded general contract to Selmer Co., Northern Building, Green Bay, Wis., for one-story addition to plant at Green Bay. Cost about \$50,000 with equipment.

B. A. Eckhart Milling Co., 1300 West Carroll Avenue, Chicago, has taken out a permit for new grain elevator unit, 88 x 100 ft., with screening, hoisting, loading and other mechanical equipment. Cost about \$100,000 with machinery. MacDonald Engineering Co., 1 North LaSalle Street, is engineer.

City Council, Bemidji, Minn., has called special election Feb. 18 to approve fund of \$620,000 for new municipal electric power plant, central steam power house for heating service, with distributing mains, and electrical distributing lines. Burlingame & Hitchcock, Sexton Building, Minneapolis, are consulting engineers.

Loup River Public Power District, Columbus, Neb., C. B. Fricke, 2307 Thirteenth Street, president, will soon take bids for a 75-ton and 25-ton traveling crane for installation at Columbus and Monroe, Neb., power plants; also for water gates, gate hoists and kindred equipment. Harza Engineering Co., 20 North Wacker Drive, Chicago, is consulting engineer.

United States Engineer Office, Fort Peck, Mont., asks bids until Feb. 17 for two air compressors, two-stage receiver mounted, with motor and auxiliary equipment (Circular 301).

Common Council, Vinton, Iowa, asks bids until Feb. 25 for one 750-hp. Diesel engine-generator set and auxiliary equipment for municipal light and power plant. Howard R. Green Engineering Co., 417 First Avenue, S. E., Cedar Rapids, Iowa, is consulting engineer.

International Printing Ink Corp., 431 Milwaukee Street, Milwaukee, plans rebuilding part of plant recently destroyed by fire. Loss over \$125,000 with equipment. Headquarters are 75 Varick Street, New York.

Water Department, Madison, Wis., will ask bids soon after March 1 for superheaters, soot blowers, suspended arched and feed water regulators for five 200-hp. Sterling boilers. L. A. Smith is superintendent.

PACIFIC COAST

Union Die-Casting Co., 2269 East Fifty-first Street, Vernon, Los Angeles, has asked bids on general contract for new one-story plant, 76 x 82 ft. Cost over \$30,000 with equipment. Hugo Eckart, 3345 South San Gabriel Boulevard, San Gabriel, Cal., is engineer.

Eldorado Oil Co., 230 California Street, San Francisco, manufacturer of coconut and copra oils, etc., has let contract to Independent Iron Works 821 Pine Street, Oakland, Cal., for superstructure for new one-story mill, 100 x 300 ft., at Oakland. Cost over \$65,000 with equipment. L. M. King is company engineer.

Pacific Gas & Electric Co., 445 Sutter Street, San Francisco, has authorized fund of about \$40,000,000 for extensions and improvements, maintenance, etc., of which over \$16,500,000 will be used for new construction, including power transmission and distributing lines, expansion in power substations, switching stations and other plants. P. M. Downing is vice-president and general manager.

Bureau of Supplies and Accounts, Navy Department, Washington, asks bids until Feb. 18 for one motor-driven metal-cutting saw (Schedule 7172), 19,500 ft. brass pipe, 10,000 lb. copper tubing and 2500 ft. copper pipe (Schedule 7153), 84 waterproof electric sound signaling horns and four sets spare parts (Schedule 7163) for Mare Island Navy Yard; two motor-driven milling machines (Schedules 7151 and 7152); motor-driven fire engine (Schedule 7138); until Feb. 21, one motor-driven drilling

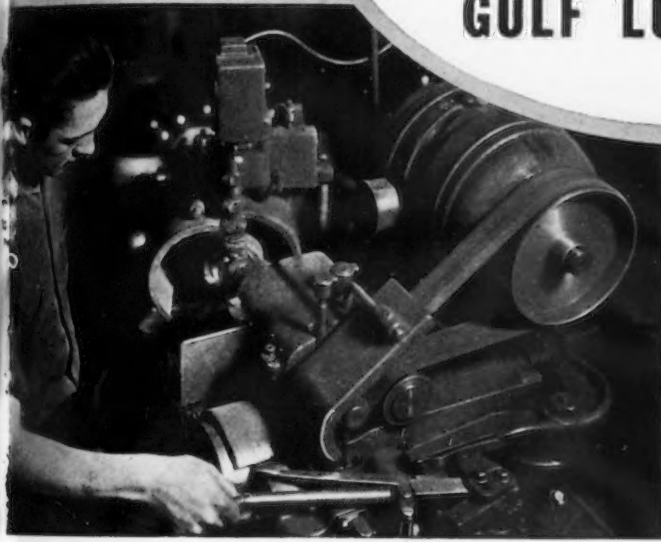


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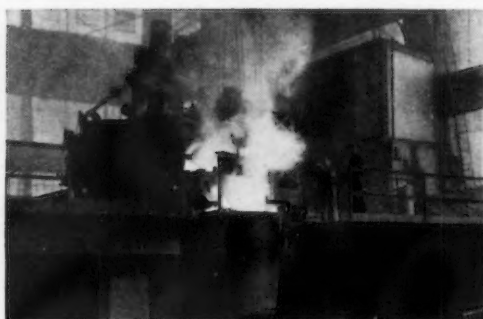


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machine (Schedule 7165) for Puget Sound yard.

Continental Can Co., 615 Orchard Street, Seattle, with headquarters in New York, has let general contract to Austin Co., Dexter-Horton Building, Seattle, for three-story addition, 120 x 150 ft., to local plant. Cost about \$115,000 with equipment.

Utah Power & Light Co., Salt Lake City, Utah, plans new steam-operated electric generating plant on Provo River, near Provo, Utah, including transmission and distributing lines, power switching stations and other structures. Cost about \$1,600,000.

◀ MICHIGAN DISTRICT ▶

Vincent Steel Process Co., 2434 Bellevue Avenue, Detroit, has plans for one-story addition. Cost over \$30,000 with equipment. Harry Angell is company architect.

Koppitz-Melchers, Inc., 2169 East Atwater Street, Detroit, brewer, will soon begin superstructure for new two and five-story brewery at Dubois Street and Detroit River, where more than two acres was recently acquired. Main unit will be 145 x 175 ft. Storage and distribution building will be erected, also power house, refrigerating plant and other mechanical departments. General contract has been let to George W. Auch Co., 3646 Mount Elliott Avenue. Cost close to \$1,000,000 with machinery. Mildner & Eisen, Hammond Building, are architects.

State Refining Co., Inc., Grand Rapids, Mich., plans new oil refining plant. Storage and distributing division will be built, with steel tanks and auxiliary equipment. Cost close to \$90,000.

City Council, Ann Arbor, Mich., is completing revised plans for extensions and improvements in municipal power plant, including new equipment. Cost close to \$200,000 with machinery. Ayers, Lewis, Norris & May, Ann Arbor, are consulting engineers.

General Motors Corp., Detroit, has let general contract to J. A. Utley, 6031 Mansur Street, Detroit, for new joint assembling plant on 43-acre tract in South Gate district, Los Angeles, for Buick, Pontiac and Oldsmobile automobiles. Main unit will be one and two-stories, 565 x 800 ft.,

with loading dock, 50 x 390 ft., pumping plant and other mechanical structures; also a two-story office building, 45 x 144 ft. Cost over \$2,000,000 with equipment. Albert Kahn, Inc., New Center Building, Detroit, is architect and engineer.

◀ FOREIGN ▶

Dunlop Rubber Co., Ltd., London, England, manufacturer of automobile tires, mechanical rubber goods, etc., plans new branch plant at Panama, R. P., for Latin American trade. Cost over \$200,000 with equipment.

North American Cyanamid Co., Ltd., Toronto, Ont., plans new works in Transvaal district, South Africa, where site is being selected, to include power house, machine shop and other mechanical departments. Cost close to \$650,000 with machinery.

Ministry of Agriculture, Government of Argentina, Buenos Aires, has been authorized to ask public bids for about 14 State-owned grain elevators in different port cities. Fund of \$22,000,000 is being arranged. Units will include screening, hoisting, conveying and other mechanical-handling equipment, with storage and loading facilities.

International Power & Paper Co., Ltd., Corner Brook, Newfoundland, plans rebuilding part of hydroelectric power plant, recently damaged by flood. Loss over \$100,000 with equipment. K. O. Elderkin is manager.

Conveying Machinery.—Palmer-Bee Co., Detroit. Well-illustrated catalog of 64 pages describing skip hoist and drag line machinery manufactured by company for use in elevating and conveying work. Catalog includes discussions of prices, terms and conditions of sale of products sold by Palmer-Bee, lists all the products and catalog numbers in which references to them may be found, and also enumerates industries which may make use of its installations. In addition, edition contains a large number of diagrams showing technical details of products.

TRADE NOTES

Toledo Steel Products Co., Toledo, Ohio, has added Tryon shackles, Silent "U" shackles, Harris shackle bushings and tie rod ends to its line, according to announcement by Joe E. Adams, salesmanager.

Hanna Furnace Corp. has removed its Detroit office to plant of Great Lakes Steel Corp., Ecorse, Mich.

Canton Foundry & Machine Co., Canton, Ohio, on Feb. 1 moved its general offices from Canton to its factory at 6400 Breakwater Avenue, Cleveland.

Link-Belt Co., Chicago, has moved its district sales office in St. Louis, from 3638 Olive Street, to 1018 Louderman Building, 317 North Eleventh Street.

F. H. Crawford & Co., Inc., formerly at 50 Church Street, New York, has moved to Room 312, 30 Church Street.

Newark Wire Cloth Co., Newark, has appointed Robert H. Brinton, 1649 Castle Court, Houston, Tex., as its Texas representative. Mr. Brinton's mail address is P. O. Box 1970, Houston.

FINANCIAL NOTES

Chrysler Corp., Detroit, had net profit for 1935 of \$34,975,819, equivalent to \$8.07 a share, compared with a 1934 profit of \$9,534,837, or \$2.19 a share. Net profit for 1935 was the highest in the company's history. Directors voted a \$1 dividend on the common stock, against 75c. declared for the third quarter.

Allegheny Steel Co., Brackenridge, Pa., has declared dividend of 25c. a common share, payable March 18, to stockholders of record March 2. Regular quarterly dividend of \$1.75 has been declared on the preferred stock, payable March 2 to holders of record Feb. 15.

United Engineering & Foundry Co., Pittsburgh, declared dividend of 37½c. on common stock and regular quarterly dividend of \$1.75 on preferred stock, both payable Feb. 14 to stockholders of record Feb. 4. Three months ago 25c. was disbursed on the common stock and in December an extra dividend of 50c. was paid.

Great Northern Iron Ore Properties had net profit in 1935 of \$533,771. As at Dec. 31, 1935, company had cash on hand amounting to \$4,616,591, and a distribution to certificate holders of \$1 a share, equal to \$1,500,000, was subsequently declared, payable Feb. 7, 1936, to certificate holders of record Jan. 25.

Acme Steel Co., Chicago, and subsidiaries, in the quarter ended Dec. 31, 1935, had a net profit of \$438,156 after interest, depreciation and Federal taxes. Net profit in the preceding quarter amounted to \$384,479, while in the fourth quarter of 1934 it was \$168,431. Earnings for the most recent period announced equaled \$1.33 a share on 328,108 shares.